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REGARDING THE

# EDUCATIONAL CONFERENCE, ALLAHABAD, FEBRUARY 1911.

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# THE
# EDUCATIONAL CONFERENCE
AT
# ALLAHABAD
FEBRUARY 1911.

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# I.—INTRODUCTION.

It was the intention of the Hon'ble Mr. H. W. Orange, C.I.E., to hold a Conference of Directors of Public Instruction at Allahabad during December, 1910, similar to that held in Simla in 1905. Owing to the contemplated formation of the new Department of Education, the Conference was postponed. The Department was formed at the beginning of 1911, and, in February of that year, the Conference assembled at Allahabad, under the presidency of the Hon'ble Mr. S. Harcourt Butler, C.S.I., C.I.E. It was attended by officils other than Directors of Public Instruction and by a number of non-officials interested in education and in industry. The proceedings were of an informal nature. This volume contains the papers circulated at various times previous to the Conference, and replies and notes handed in by various members; and it records the discussions which took place at the Conference itself.

# II

## Record of the Discussions at the Conference.

# EDUCATIONAL CONFERENCE, ALLAHABAD, FEBRUARY 1911.

## PRIMARY EDUCATION.

### FIRST DAY, MONDAY, FEBRUARY 13TH, 1911.

*Members Present*:

The Hon'ble MR. S. H. BUTLER, C.S.I., C.I.E.
" " NAWAB ABDUL MAJID.
" " MR. G. K. GOKHALE, C.I.E.
" " RAO BAHADUR R. N. MUDHOLKAR.
" " MAULVI SYED SHAMS-UL-HUDA.
" " MR. L. STUART, I.C.S.
" " " R. BURN, I.C.S.
" " " J. L. STONE.
" " " W. H. SHARP.
" " " G. W. KÜCHLER.
" " " C. F. DE LA FOSSE.
" " " J. C. GODLEY.
" " " N. L. HALLWARD.
" " RAI BAHADUR PANDIT SUNDAR LAL, C.I.E.
" " MR. A. CHATTERTON.
" J. G. COVERNTON.
" A. G. WRIGHT.
" J. A. RICHEY.
" MASANI.
" DIKSHIT.
DR. ZIA-UD-DIN AHMED.
MR. W. H. JAMES.
" H. SHARP.
SIR EDWARD PARROTT also attended the meeting.

The Hon'ble Mr. Butler in welcoming the members of the Conference said that he would first place certain questions before the Conference and that members would then have an opportunity of bringing matters forward. What was wanted at this stage was a scheme for the improvement and the expansion of primary education. This could not be an uniform scheme for India. Conditions varied locally and practical schemes would have to be worked out in communication with local Governments. These would depend on financial conditions regarding which he could say nothing at present. Mr. Orange had made certain proposals, but they did not go into local details. An exchange of views would be of advantage to all.

2. A survey with a view to fixing the location of primary schools has already been taken in Bombay, Madras and Eastern Bengal and Assam. Mr. Masani described the survey and the expansion of schools in Baroda which had been made on a steady comprehensive plan. Mr. Küchler advocated the deputation of a Deputy Inspector in each district for one year for this work in Bengal. He pointed out that in Bengal there are thirty-five thousand primary schools which works out to one school for less than $3\frac{1}{2}$ square miles. Hence, it was not more schools but rather a redistribution of schools which was required in Bengal, and he was inclined to advocate the raising of the numbers from 30 pupils per school to 50 as proposed by Mr. Orange. The advantages of Preliminary Survey.

centralisation were emphasised and the importance of having more than one teacher at a school. The ideal was to have a teacher for each standard. It was generally agreed that the principal object of a survey would be to find central villages where central well-equipped schools can be established, which would be fed by simpler forms of schools. It was thought that the campaign against illiteracy should be started by a large expansion of elementary schools of lower primary type, which would in time develop into upper primary schools where conditions were favourable. It was felt, however, that the line of advance would differ considerably in different provinces and parts of provinces.

Standard of instruction.

3. It was generally agreed that the new methods of instruction—observation lessons, nature study, etc.—are suitable where qualified teachers are available. At present the "three Rs.", drawing and the village map would form the ordinary curriculum. The present curricula in certain provinces exist largely on paper only. They can be retained as something to work up to in time as qualified teachers become available.

Urban and rural schools.

4. It was pointed out that in the United Provinces a committee has decided in favour of difference of treatment rather than distinction of curricula; and Mr. Küchler pointed out that the course in some parts of Germany is uniform up to the twelfth year of a child's age. Mr. Stone said that in urban schools all that was wanted was a different set of subjects for object lessons. The general feeling was against any distinction of curricula as between urban and rural schools; but Mr. Chatterton raised the question of the differentiation of education for artisans. Dr. Zia-ud-din advocated different courses of drawing for different pupils, such as carpenters, etc. It was, however, generally felt that such distinctions would be premature and that the important thing was to get suitable teachers, livers in the country as teachers in rural schools and livers in towns as teachers in urban schools.

Hours of study.

5. The arrangements prevailing in various provinces were described; and the sense of the Conference was in favour of a daily period of four hours. In the United Provinces and in Bengal as also Berar, Central Provinces and Bombay the school day consists of two separate periods; and Maulvi Syed Shams-ul-Huda was in favour of a half-time system with three hours instruction in the morning and a compulsory curriculum, with a further period of two hours and a voluntary curriculum in the afternoon. His object was to interfere as little as possible with the work of the boys in the fields.

Number of children per teacher.

6. Mr. Küchler, having regard to the practice in other countries, advocated a maximum of 50 pupils per teacher in an elementary school, though he admitted that theoretically the number should be smaller. Generally the number which is considered suitable for one teacher in the various provinces is about 30; and though no definite conclusion was arrived at, the sense of the Conference was that 30 or 40 pupils when divided into classes are sufficient for one teacher.

Number of classes.

7. It was generally considered that there should be a class for each year of the course, and that the ideal system was to have a teacher for each class. Maulvi Syed Shams-ul-Huda pointed out that in *maktabs* there used to be no grading in classes and that the teacher dealt with pupils individually.

Training of teachers.

8. It was generally thought that the minimum original qualifications of a teacher should be the upper primary standard, though Mr. Küchler pointed out that a *guru* who has passed only the lower primary may attain to a fairly high standard in a training school. The systems prevailing in various provinces were described with some minuteness; and the discussion mainly turned upon the merits of a system of high class central normal schools as against systems of training classes or numerous lower grade training schools. Mr. Gokhale considered that central training schools could not cope with the numbers required. Dr. Zia-ud-din Ahmed raised the question of recognising well-qualified teachers who had not been through a regular training course; and Maulvi Syed Shams-ul-Huda advocated an examination for teachers who had not gone through a course of training instruction. To this last Mr. Covernton objected that it would place training schools at a discount. The general sense of the meeting was in favour of an expansion of

smaller training schools in the first instance, provided that there were a sufficient number of them. It is thought desirable to train the teachers as near as possible to their work.

9. The Hon'ble Mr. Gokhale favoured an expansion by means of Board schools rather than aided schools. Rao Bahadur R. N. Mudholkar was likewise in favour of Board schools. Mr. Masani pointed out that aided schools in Baroda had proved a failure and that the education department there had now sole management of primary schools. Rai Bahadur Pandit Sundar Lal, Maulvi Syed Shams-ul-Huda and Nawab Abdul Majid, though preferring Board schools, would not favour an expansion of Board schools to the exclusion of aided schools. The general sense of the meeting was that Board schools are ordinarily better than aided schools and should if possible be increased in number, but where this is financially impossible then aided schools under recognised management should be increased, but not private venture schools. Board schools and aided schools.

10. The rates prevailing in various provinces were described in detail; and while it was found that the prevailing rates varied greatly it was likewise found that R12 is generally regarded as the minimum pay proper for a trained teacher in a Board school. The opinion of the Conference was that this rate of R12 should be adopted as the minimum for trained teachers in Board schools and that these teachers should be placed in a graded service and given either pensions or a provident fund. The rules regarding pensions in Bombay, Baroda and Berar were alluded to and likewise the provision of provident funds in the United Provinces. It was thought undesirable to fix a minimum for an untrained teacher as possibly operating to check the flow of teachers to training schools. And Mr. Covernton pointed out that R12 could not be accepted as the minimum for a trained vernacular teacher in Burma. Salaries of teachers.

11. The cost of buildings in different provinces was explained. Mr. Masani stated that in Baroda there is an annual grant of a lakh and a half (which is generally exceeded) for this purpose. In Baroda they think it cheaper in the long run to have strong *pucka* buildings costing from R2,000 to R6,000 per school. This was felt to be impossible of attainment over large areas. The general sense of the meeting was that if possible buildings should, at least in the first instance, be hired, but if this is impossible, or the permanent need for a school is established, substantial but simple buildings must be erected. In the United Provinces provision is frequently made for the residence of the teacher in the school building. This is not so elsewhere. It was felt generally that the practice of combining teachers' quarters with school buildings was not desirable. It was also felt that Public Works agency is too expensive for this class of buildings, and that the maintenance of a special consulting engineer in the education department of each larger province would be justified. School buildings.

12. Ninety schools is generally regarded as the maximum which a single inspecting officer can supervise. In Baroda, 75 schools and 5,000 pupils are the limits. As schools become more numerous and closer together and as the quality of the teachers improves, it was thought that this number might be raised to 120, but local variations would always be necessary. Inspection.

13. A description of the various systems showed that the departments of education have considerable control in most provinces. The sense of the meeting was that the department should have complete control over the inspecting staff and in all technical matters, but that the appointment of teachers might rest with Boards and school managers. Mr. de la Fosse urged greater control in the matter of the opening and closing of schools; and the Conference strongly supported his view. Mr. Masani said that their experience in Baroda had led them to put the whole management and control into the hands of the education department. Control.

14. Mr. Burn saw no chance of much expansion in the United Provinces till the agriculturist and the artisan should change his habits. Maulvi Syed Shams-ul-Huda said that numbers would expand if the teacher is popular and that, in order to attain this, the teacher should be of the same class as the majority of the pupils. The general sense was that a large expansion was possible. Possibility of expansion.

Variety in the system.

15. Rao Bahadur R. N. Mudholkar urged that Boards should be given power to modify curricula according to local requirements and to decide fee-rates, hours of study, holidays, appointment of teachers, etc. Mr. Küchler agreed and said that this represented the actual practice, save as regards curricula which are a difficult matter necessitating professional knowledge. Mr. Wright pointed out that in the Central Provinces some local option is permitted. It was thought that there was no great room for divergence in elementary curricula, but that where necessary the matter could appropriately be considered by local committees.

# TECHNICAL AND INDUSTRIAL EDUCATION.

SECOND DAY, TUESDAY, FEBRUARY 14TH, 1911.

*Members present*:

The Hon'ble MR. S. H. BUTLER, C.S.I., C.I.E.
" " NAWAB ABDUL MAJID.
" " MR. G. K. GOKHALE, C.I.E.
" " RAO BAHADUR R. N. MUDHOLKAR.
" " MAULVI SYED SHAMS-UL-HUDA.
" " MR. L. STUART, I.C.S.
" " " R. BURN, I.C.S.
" " " J. L. STONE.
" " " W. H. SHARP.
" " " G. W. KÜCHLER.
" " " C. F. DE LA FOSSE.
" " " J. C. GODLEY.
" " " N. L. HALLWARD.
" " " A. CHATTERTON.
" " RAI BAHADUR PANDIT SUNDAR LAL, C.I.E.
COL. E. H. DEV. ATKINSON, R.E.
MAJOR W. V. SCUDAMORE, R.E.
MR. W. H. MORELAND, C.I.E.
" J. G. COVERNTON.
" A. G. WRIGHT.
" J. A. RICHEY.
DR. MORRIS W. TRAVERS, F.R.S.
DR. A. DU PRÉDENNING.
MR. W. R. WILSON.
" A. D. PICKFORD.
" P. BRÜHL.
" T. S. DAWSON.
" MASANI.
DR. ZIA-UD-DIN AHMED.
MR. DIKSHIT.
" W. H. JAMES.
" K. SUBRAMANI AIYAR.
BABU JOGENDRA CHANDRA GHOSH.
MR. H. SHARP.

SIR EDWARD PARROTT and MR. R. M. CHONKAR also attended the meeting.

The Conference discussed the draft Resolution (see page 41) which the Hon'ble Rao Bahadur R. N. Mudholkar had proposed to move in the Imperial Legislative Council on January 24th, 1911. They considered in detail each of the branches of industrial instruction mentioned in paragraph (1) of the Resolution under the different heads which he had suggested.

Railway engineering.

2. The question was raised of a general engineering education *versus* specialisation in railway engineering. He explained his position which was that both the civil (that is constructional and maintenance) branch and the mechanical

and locomotive branch required special instruction in addition to general civil engineering or mechanical engineering courses. Such special instruction had to be in regard to principles or theory as also practice. Colonel Atkinson and Major Scudamore considered it impossible to have separate railway engineering classes in engineering colleges, though at Roorkee a small amount of special instruction is given along with general instruction and a railway and irrigation project form part of the course. Colonel Atkinson said there were a number of men trained in Civil Engineering in its various grades waiting for employment. These men would be fit for employment on railways with some special practical training but there was very slight demand for them from the railway administrations. Further it was very difficult to get openings or apprenticeships in railways for the products of the mechanical department; and few if any of these men were in a position to pay for apprenticeships. Mr. James added that the railways had taken only one man from the college at Madras. Dr. Denning instanced the Pennsylvania railway, which agrees to take annually six of the best men turned out by engineering institutions, and added that a well-trained engineer with a good foundation would become a railway engineer without any special training in college. This view was corroborated by Mr. Brühl and Dr. Travers. The latter said that the practice in England is to give a good general engineering education and then to apprentice the student in the railway. Mr. Wilson urged that there would be no lack of employment if the colleges could turn out men with sufficient aptitude; but the college man must be prepared to put his hand to rough work and learn enough in practice to show those working under him how it is done. Mr. Chatterton agreed that specialisation must not be begun in the college. Babu Jogendra Chandra Ghosh proposed that the course at Sibpur should be assimilated to that at Poona and at Roorkee. The general sense of the discussion was to show that the college training should be of a general nature, but that a railway project such as that given at Roorkee was desirable.

3. The discussion then turned upon the subject of apprenticeship and the possibility of obtaining it for Indians. Mr. Gokhale and Rao Bahadur R. N. Mudholkar pointed out that Indians had not readily found employment and that despite Colonel Atkinson's assertion that the best instruction is available at Roorkee the same facilities for practical training are not obtainable in this country as in England; it is not merely class-room instruction but likewise practical instruction on works as regards construction and in the workshop and on the locomotive as regards mechanical engineering which is required. What was wanted was to arrange to give Indians a trial after the requisite training. Mr. Küchler said that we must regard the problem from the point of view of the railways who do not desire to employ college-educated men. Mr. Burn said that the man who has been trained at Roorkee ought either to pay a premium and become an apprentice or work as an ordinary mechanic in the railway workshops, and that it is found that the Indian student is not ready to do this. It is not yet recognised in this country as in western countries that a man must work his way up in his profession. Mr. Dawson and others disagreed with Rao Bahadur R. N. Mudholkar's assertion that railway engineers do not, like workmen, begin at the lowest rung; and Mr. Dawson further stated that in Bombay apprentices on the railway cannot expect to get more than R40 after four years' work. Dr. Travers said that he had been for many years connected with institutions in England which trained students who afterwards became railway engineers. After following a three-years course at the university the student became the pupil either of the chief engineer or of the locomotive superintendent, paying one hundred guineas a year for the privilege for three years. The students were then allowed to enter the drawing office or the workshops as the case might be. The pupils in the workshops were expected to be at work from 5-30 A.M. till 5 P.M., and during the first year they drew pay as boys of from five to ten shillings a week. They were treated as ordinary apprentices, and might have to wheel a barrow or carry out any work for which their lack of skill fitted them. At the end of three years they would have acquired a thorough knowledge not only of the work of the shops, but of the workmen. However, the railway was not by any means bound to provide them with

employment, and if they were taken on the staff they could not expect to earn more than £150 a year at first. The chief engineer's pupils in the drawing office were more or less similarly treated, and their services were often loaned to contractors who were doing work for the railway.

4. The question of age was next discussed. Mr. Chatterton said that the previous training of the Indian student prejudices him to some extent for employment, since a pupil enters an engineering college too late, *viz.*, about the age of 21. He urged that we start with the wrong material and that we must get hold of the boys earlier and put them sooner and for a longer period into the workshops. Major Scudamore, however, would not take boys earlier. He urged that they would be mentally unqualified while Mr. Dawson urged that they would be physically unqualified. Mr. Brühl stated that to be admitted to the apprentice department of the Sibpur College the candidate must be under 17 years of age, whilst the age of students admitted to the engineering department is anything between 18 and 23 years. No difficulty has been experienced in connection with the practical work in the workshops. Mr. Pickford said that the matter is one of temperament rather than of training; he said that the experience of the Cawnpore Electric Supply Company was that for one student from Roorkee who remains two years, five or six leave in a few months because the Company insist that they shall remain at the switch-board and do not permit them to think that they are finished electrical engineers when they leave the college. He added that only one student had risen higher than a switch-board attendant, though there was no bar to their further progress. Mr. Küchler suggested that if secondary education were improved, we should be able to produce competent English-knowing pupils with all-round qualifications at an earlier age. Mr. Chatterton said that the Indian boy does not get the same manual training in his home which the English boy gets. And Rai Bahadur Pandit Sundar Lal said that manual training in schools was the remedy for this. Mr. Masani stated that those who have received manual training as a part of the secondary school course become good draftsmen. The Conference agreed as to the importance of manual training and better teaching of English in the general secondary schools.

5. With reference to the main point in discussion, Rao Bahadur R. N. Mudholkar pointed out that there are State railways in India and other railways under State control. He asked no preference for any special creed or caste, but he wished to see the people of India employed. The reason why they are not employed is that there is insufficient co-ordination between educational institutions and the railways. But it is in the power of Government to compel the controlled lines, *i.e.*, State lines worked by the State or Companies and lines subsidised by the State, to give a practical training to Indians.

6. The general sense of the Conference was that the existing engineering colleges were generally on the right lines; that the standards were rising; that specialised college courses in railway engineering were not needed; that it would be desirable to take students at an earlier age into engineering colleges when secondary education had been improved, especially in the direction of manual training; and that efforts should be made to arrange with the railways for giving the students of technical colleges a trial. It was a matter for consideration whether the course at the Civil Engineering College, Sibpur, should not be assimilated to that of the colleges at Poona and at Roorkee.

Marine engineering.

7. Rao Bahadur R. N. Mudholkar pointed out that chief engineers required to be certificated, but not so assistant engineers. They are doing much the same work though the assistant engineer has not equal qualifications. There is a large demand for assistant engineers; and if well-trained men can be supplied there will be larger scope for the employment of Indians in the higher posts. Similarly, in ship-building yards, the higher employés—overseers, sub-overseers and engineers—are invariably imported from abroad.

8. Mr. Dawson said that there is nothing to prevent Indians from becoming assistant engineers or chief engineers and that they had filled such posts. It is merely a question of their taking up the right course and getting sufficient practice. But Indians have not the same chance of employment. He added that he knew of only four who had sat for chief engineers' certificates in

Bombay. He explained that the Board of Trade accept three years in a technical college as the equivalent of two years in a marine engine workshop, which must be supplemented by further practical engineering work for two years and by one year as assistant engineer on watch in an ocean-going steamship, before the candidate can sit for a second class Board of Trade engineer's certificate; and this is the rule all the world over. It was suggested that Indians could go home as chief engineers (as they had to spend twelve months at sea) and there obtain extra chief engineers' certificates. Mr. Dawson added that only 10 of his students were in the marine line so far as he was aware.

9. Rao Bahadur R. N. Mudholkar asserted that there must be some evidence of a man being practically fitted for the work before he could be placed in charge, and that a special course would supply this if followed by practical experience. Mr. Brühl pointed out that his students, having become 4th engineers, could naturally rise to be chief engineers.

10. Mr. Dawson stated that the rules on the subject are those of the Board of Trade; but that if steamship companies could be induced to take Indians, then the Indians could get the practical experience necessary; but that at present only coasting ship companies will permit this and not the larger steamship companies. It was further pointed out that, in 1890, Mr. Collins had reported that native engineers are employed in small steamers who have no knowledge of machinery and consequently allow the engines to get out of repair and cause great expense, and that this could probably be remedied by a change of the law. It was suggested that this was a matter which should be left to the local Government.

11. It was the opinion of the Conference that the Indian Marine and the steamship companies should be approached with a view to providing, if possible, a certain number of posts for Indians as uncertificated engineers in order that they might get the practical training necessary.

Ship-building and navigation.

12. Babu Jogendra Chandra Ghosh said that we should send boys to England. It was pointed out that there was no great scope for steel ship-building until we could get our raw material in India. Dr. Travers pointed out that two schools are sufficient for England and one for Germany. Mr. Dawson stated that the vessels of the Bombay Steam Navigation Company are officered, engineered and manned throughout by inhabitants of India and that these are large ships some three hundred to three hundred and fifty feet long frequently carrying a thousand passengers or more. It was pointed out that *serangs* from Chittagong are doing very good work on river-boats in Bengal. The general feeling of the Conference was that there appeared to be sufficient opportunity for employment and that the subject need not be further pursued.

Mining engineering.

13. Rao Bahadur R. N. Mudholkar asked that full effect be given to Mr. Heaton's suggestions to make the course at Sibpur a college course leading up to a Bachelorship of mining engineering. He pointed out that there is only one institution, namely Sibpur, at which any instruction in the subject is given and that the instruction there is insufficiently advanced and the equipment inadequate. Babu Jogendra Chandra Ghosh likewise urged that the course proposed by the Committee of 1906 which he understood had been sanctioned by the Secretary of State should be fully introduced.

14. Mr. Brühl explained that the mining course at Sibpur is a part of the apprentice department and that some bifurcation is allowed for, general engineering being combined with mining instruction. He said that the students were getting employment, but that some who commenced the course had drifted away to other kinds of employment. He further pointed out that the same lectures which are delivered to the students of the apprentice course in mining would likewise be suitable for a degree in mining engineering were it established, but if the subject were included in the engineer course the college would require strengthening for general purposes. Mr. Küchler thought that employers would make no difference between apprentice and engineer students, and that Bachelors of Engineering would find employment if they were ready to take low initial positions. Mr. Chatterton urged that special mining instruction should be separate from any university course. Mr. Butler mentioned that he had it from a manager of mines that

Sibpur boys come to the work too old. Mr. Dawson stated that some years of practical training are necessary and pointed out that in Lancashire overlookers in mines are generally men of no education whatever.

15. Mr. Subramani Aiyar said that if there were a degree of mining engineering a better class of students would be attracted who would be in a position to promote joint stock companies of their own. He also argued in favour of a short course of commercial education as a portion of every kind of advanced industrial instruction with special reference to the sources of supply of the raw materials and the markets for the finished products of the particular industry for which the student is being trained, facilities for the transport by rail and water of such commodities, cost accounts, financing the industries, and the formation of partnerships and joint stock companies for the purpose. Mr. Chatterton objected to this proposal that it would only give a smattering of knowledge and a false idea of qualifications and position.

16. The question of the location of the Sibpur College in the coal districts was incidentally raised. Dr. Travers strongly pressed against the isolation of a college away from town as it is so necessary for teachers in these subjects to be in an atmosphere where they can exchange ideas with other scientific and practical men. Mr. Küchler said that technical classes would in any case be required in Calcutta. Mr. James remarked that the Madras Government had decided that their college should remain in the neighbourhood of Madras. Mr. Chatterton pointed out the advantage which climate gives to Roorkee. He also raised the question of affiliating technical colleges to the University, which he thought a great mistake. It was far better as at Roorkee to give one's own diplomas.

17. The sense of the Conference was that there should be a mining course at Sibpur corresponding to the standard of the university degree of engineering, the question whether this course should lead to an university degree or to a college diploma being left over.

18. After some discussion of the meaning of this term it was generally decided that instruction in mining chemistry should be regarded as a portion of applied chemistry. Mining chemistry.

19. Rao Bahadur R. N. Mudholkar pointed out that Indian manufactures such as the refinement of sugar and oil are in a bad way and that managers and foremen possessed of a good education are required to improve them. He recognised that as regards textiles something is being done at Bombay and at Serampore. Even there, however, we require higher and more practical instruction. In other trades we are doing nothing. Industrial chemistry.

20. Mr. Pickford explained the difficulties at present encountered in sugar extraction and refining. He pointed out that the industry in this country falls under two main heads:—

(*a*) The comparatively large factory; working on modern lines, and

(*b*) the small individual manufacturer of raw or refined sugar, working by indigenous methods.

As regards (*a*), his own firm employs the best expert advice, and the methods of manufacture are probably as good as they are anywhere else. The reason why the trade in Java is flourishing while that in India is at present languishing, is not, as regards the (*a*) class of producer, connected with the processes of manufacture, but is due to the fact that in Java there are more favourable conditions of climate and soil, the sugar growing areas are more concentrated, and there is more co-operation in research. There was, however, an opening for practical chemists, or rather practical sugar makers with a knowledge of chemistry, in the larger type of factories. Any man with a knowledge of arithmetic can be trained to undertake in a few weeks purely chemical tests in connection with sugar manufacture.

As regards (*b*), that problem also is not concerned with chemistry, but rather with the processes employed in manufacture. The present processes other than in the large factories pursued in the manufacture of both raw and refined sugar entail enormous losses; and what is here required is men trained in practical sugar making with of course a sufficient knowledge of chemistry to enable them to conduct their own tests and so avoid undue losses.

21. Mr. Chatterton stated that as the result of his enquiries he considered that the reason why more cane is not cultivated is that the cultivator has not sufficient cattle to crush it. Power-driven mills, each capable of dealing with an acre of cane a day, had been introduced with success in the Madras Presidency and central mills had also been set up for the production of *jaggery*. He proposed demonstration factories and stated that the problem was not chemical but one of field refinement.

22. Rao Bahadur R. N. Mudholkar pointed out that Indian sugar produced by the old methods costs R18 per maund and produced along modern lines R12 to R12-8 per maund, while Java and other imported sugars can be sold for R8 to R9 per maund. This state of things he considered could be remedied by the application of a knowledge of chemistry, and, while admitting the difficulties pointed out, he considered they would be largely obviated if there were companies which could take up a certain number of fields and concentrate the cultivation of cane upon them in such a way as to be able to cut the cane at different times of the year (a point in which as Mr. Burn had pointed out Java had the advantage); while better crushing appliances should be substituted for the present defective methods. If these companies contained men of chemical knowledge the cost of manufacture would be greatly reduced.

23. Mr. Moreland said that it is impossible to foresee the future of the sugar industry in India. Circumstances differ greatly in different areas and capitalists are now experimenting in various ways. There are about nine factories with European equipments in the United Provinces and the adjoining provinces of Behar and the Punjab. The Indian community desires to purchase home-produced sugar if possible, and any diminution of the sugar area would mean a collapse both of this and other industries. We must have specially trained refiners if the sugar industry is to become a success; and it would be impossible for a chemist with only general training to ensure success in a sugar factory. Research by a sugar chemist was an urgent and pressing need. Mr. Burn added that the United Provinces Government intended to make a beginning at Cawnpore in the proposed technological institute when this scheme was sanctioned.

24. Dr. Travers said that he was of the opinion that for the purposes of teaching and research it was impossible to separate pure and applied chemistry. In the Indian Institute of Science they proposed to establish three departments of chemistry—one of general chemistry, one of organic chemistry, one of applied chemistry. It was important that these departments should be under the control of able and experienced men and he thought that the professor of applied chemistry should have had ten or fifteen years of successful experience of chemical industry. The services of such a man had been secured for the institute. The departments of general and organic chemistry would concern themselves with the training of students, and with research in pure chemistry, dealing with the more purely scientific problems which might arise in connexion with the experiments carried out in the department of applied chemistry. The staff of the latter department would confine their attention to technical problems. Out of these main departments minor departments connected with highly specialised industries, and others dealing with such subjects as analytical and agricultural chemistry, would gradually develop. Teaching and research in applied chemistry could only be carried on with the co-operation of certain other departments, such as engineering and applied bacteriology. The Council of the Institute had selected electrical engineering as the branch of the subject for which little provision had been made in India, and for which it appeared that there would be a demand in the near future. Applied bacteriology—the study of fermentation problems—was essential to the investigation of many industrial problems. Lastly, he considered it necessary that there should be a department of agriculture in the institute. Most of the technical problems with which they would be dealing would involve the treatment of agricultural products as raw material. Such questions as the means and cost of production, and the cost of transport of it, must be dealt with by an expert on the spot. The six departments which he had named were essential constituents of a scientific and technological institution for India which could develop in time into a full faculty of pure and applied science.

25. In reply to Rao Bahadur R. N. Mudholkar's query as to whether the institute would be able to provide instruction in the latest methods of oil-pressing, etc., Dr. Travers replied that the department of applied chemistry would be equipped with the more important types of chemical manufacturing plant, enabling students to carry out experiments on a manufacturing scale; but he could not promise to provide the latest machinery for extracting the oil from the different kinds of seeds. The students would learn the chemistry of the various processes, and how to conduct technical experiments, by the actual use of machinery. The department would contain a large library of catalogues of manufacturing plant, which the students might regard as text-books and from which they could gather information as to the latest improvements in machinery. Though students possessing a little capital might be able to start industries such as the manufacture of drugs, essential oils and possibly soap, candles and similar products, without assistance, he thought that those who would gain most advantage from a course of study in the institute would be lads whose relatives or connections were interested in industries. Those students would have an immediate opening for their talents and would be able to bring their scientific and technical knowledge to bear on industries which had previously been conducted by rule-of-thumb methods.

26. Dr. Travers added that the institute at Bangalore would need to be supplemented by institutes elsewhere.

27. Mr. Chatterton said that in Madras they were contemplating institutions, in some cases mono-technical, equipped with all the most modern machinery. The operations would be along empirical lines. He instanced the two leather tanning schools in England, of which the leather trade school at Bermondsey was probably the type which would be more useful in the south of India. He stated that in Madura a large number of people were making a livelihood by dyeing, and that a large European firm which had opened works with modern processes had had to shut up their shops in competition with them. We do not want to replace these craftsmen. What we require is to teach them better methods and to effect this the instructor must live among them.

28. The Conference agreed that the Indian Institute of Science at Bangalore should be developed as far as possible on the lines suggested by Dr. Travers and should be fully developed as a complete faculty of pure and applied science. But the Conference were unanimously and strongly of opinion that this institution even when fully developed will not meet the requirements of India even at the present time and that there is urgent need for local institutions to deal with local industries.

29. The Conference next considered a programme of instruction in existing or proposed institutions. **Definite recommendations regarding local institutions.**

*Cawnpore.*—The proposed Technological Institute at Cawnpore would offer instruction in the chemistry of sugar manufacture and of leather; also in textiles and alkalis (there was some discussion as to the future of the alkali trade in India and the demand for factories, Dr. Travers asserting that there is as yet no demand). Mr. Pickford stated that he had a mandate from the Chamber of Commerce to express disappointment that the scheme had not yet taken practical shape. The Conference agreed that the original recommendations of the Naini Tal Committee as regards the Institute at Cawnpore should be carried out as soon as possible in their entirety.

*Bombay.*—Mr. Dawson's recommendations regarding the Victoria Jubilee Institute as contained in his note were regarded as suitable, with the omission of metallurgy, sugar refining, metallurgy and analysis of food and drugs (in which instruction should be given in agricultural and selected science colleges with a view to meeting the demand for qualified persons which is likely soon to spring up). Likewise, higher electrical engineering, gas engines and producers, testing of metals and other materials, electric transmission of power and advanced mechanical engineering should be developed either at Poona or at Bombay, or at both. There remained (as subjects which should be taken up in the institute) plumbing and sanitary engineering, telegraphy and telephony, calico-printing, thread and hosiery manufacture, advanced weaving design, manufacture of oils, fats, paints, varnishes, candles and soap, dyeing, bleaching and sizing of yarn and cloths. The five

engineering subjects were left uncertain. Mr. Dawson's suggestion as to the reservation of appointments was held to be covered by the previous discussion; while his proposal to empower the institute to hold examinations for engineer certificates under the Bombay Boiler Act appeared to be a question for the Bombay Government. In this connection, Mr. Dawson pointed out that only 30 per cent. of his pupils come from the Bombay Presidency, the others from other parts of India, and that these outsiders may be said to cost the institution R45,000 a year. Mr. W. H. Sharp said the Bombay Government were not altogether in favour of outside students coming to Bombay in their present numbers. It appeared to the Conference that this was not the place to consider inter-provincial adjustments.

*Bengal.*—The question of mining engineering at Sibpur had already been treated of. Dr. Travers, however, gave a word of warning regarding electrical engineering, stating that his own institution was perhaps in advance of the need of the times. Regarding industrial chemistry, it was agreed that the class at Sibpur should be fully equipped and developed. Dr. Travers emphasised the necessity of appointing as teachers of applied chemistry only such men as possessed industrial experience.

Metallurgy and metal manufacture.

30. Rao Bahadur R. N. Mudholkar quoted from the report of Colonel Clibborn's Committee. But it was generally agreed that there is no demand for metallurgy. As regards metal manufacture Mr. Chatterton said that a metal trade school was contemplated in Madras which would supply the need of all India for copper, brass, aluminium, etc. Mr. Dawson stated that he had a full equipment for sheet metal working and enamelling, but that the plant had lain idle for two years for want of pupils. He pointed out that enamel-ware from Germany and Austria could be purchased as cheap as the raw material in India. Hence it is obvious that there is already a school at Bombay for metal work which offers more than sufficient facilities for the purpose.

Mechanical and electrical engineering.

31. Institutions at present exist at Sibpur, Poona, Bombay, Bangalore, Roorkee and Madras. Mr. Küchler urged that he would like a mechanical and electrical engineering college at Calcutta. It was agreed that there is clearly a demand for mechanical engineers and a lesser demand for electrical engineers.

32. The individual institutions were then considered in turn.

*Roorkee.*—Higher mechanical engineering is being pushed ahead at Roorkee. Colonel Atkinson stated that a different type of men would be turned out from that which is contemplated by Dr. Travers at Bangalore. No new developments are required at Roorkee. The new course is meeting existing requirements.

*Sibpur.*—All requirements will be met by the proposals for more advanced mechanical and electrical instruction which should be carried out as soon as possible.

*Bombay.*—This has been already dealt with.

*Bangalore.*—Provides the most advanced teaching.

*Madras.*—Here higher mechanical engineering is already being developed and it is intended to develop higher electrical engineering also. Mr. Chatterton foresaw a large demand for mechanical engineers in Madras Presidency. Mr. James considered that, with the Indian Institute of Science close at hand and the Madras schemes for the establishment of technical institutes for special trades, it would be necessary at present to develop only electrical engineering in addition to mechanical engineering.

*Punjab.*—A small engineering school exists at Lahore. Proposals regarding developments are expected, but as they have not arrived no action can be taken on them. As explained in a note by Colonel Atkinson the majority of the students passing out of Roorkee are Punjab men, and it is anticipated that the new developments in the Punjab may restrict employment to men who pass from the Lahore school.

Textiles.

33. A portion of Colonel Atkinson's note was read and Mr. Burn said that the present arrangements at Roorkee were mainly for spinning and not for weaving. Mr. Dawson explained that it was intended to develop dyeing at the Victoria Jubilee Technical Institute and that this would not interfere

with the local market. He suggested the necessary staff and said that with the recommendations already made (which covered dyeing and bleaching, etc.) no further developments would at present be wanted.

34. Individual institutions were then considered :—

*Bombay.*—With the developments which have been suggested, the Victoria Technical Institute will meet all demands which may be made upon it.

*Roorkee.*—Equipment should be extended as soon as possible to include weaving as well as spinning for which latter alone provision is now made.

*Bengal.*—Has, at Serampore, arrangements for power and for handloom-industries.

*Lucknow.*—The School of Design is taking up applied designing in cloth-printing, dyeing and the whole range of textiles. Dr. Travers noted that a school of design must be connected with a special industry.

35. Mr. Chatterton raised the question whether, with the Victoria Technical Institute giving higher instruction, we should continue to send scholars to England. Mr. Dawson pointed out that the instruction given in Bombay in spinning, weaving and kindred subjects is as good as, and indeed better than, what can be obtained in Manchester, because the school is as well equipped as the Manchester School of Technology, and because the education is gained under the exact conditions which apply to the trade and industry of the city of Bombay and with particular regard to the characteristics of the Bombay Presidency trade of textile works which is different altogether from that which obtains in England. Rai Bahadur Pandit Sundar Lal suggested that before changing the present system we should wait for a few years ; and Rao Bahadur R. N. Mudholkar was for retaining the present scholarships and sending deserving students after they had received all the training available in this country and had further got practical experience by actually working in a factory or establishment for two or three years. Mr. Chatterton raised objection to the method of selection and said that the scholars should have experience ; but it was decided that no recommendation regarding selection should be made. And the question of discontinuing the scholarships was dropped.

36. In concluding the discussion Mr. Butler said : "We all derive great benefit from coming together here and exchanging ideas ; and it seems to me that if we have conferences of this character, not too often but at intervals, to discuss matters, it will be a very good thing. It gives, I am afraid, a certain amount of trouble to some members, but it brings us all together. We are all working for the same end and we can all learn something from discussion. We want to kindle fresh ideas and keep up enthusiasm. And I would go further and suggest that there might be more moving about among the staff of the different colleges. The staff at Roorkee might be encouraged to go down to Bombay and Sibpur and Madras and *vice versá* and see what the other colleges are doing." The Conference unanimously endorsed these remarks.

The Conference wished it to be on record that although the discussion was restricted to Mr. Mudholkar's Resolution and points arising from it, they recognised the vast importance of other branches of technical instruction. In particular they did not wish to prejudice, by omission, schemes which they understood were under consideration but had not been placed before them.

## MORAL AND RELIGIOUS INSTRUCTION.

THIRD DAY, WEDNESDAY, THE 15TH FEBRUARY 1911.

*Present*:

The Hon'ble Mr. S. H. BUTLER, C.S.I., C.I.E.

The Right Reverend the BISHOP of LUCKNOW.

The Hon'ble NAWAB ABDUL MAJID.

" MR. G. K. GOKHALE, C.I.E.

" RAO BAHADUR R. N. MUDHOLKAR.

" MAULVI SYED SHAMS-UL-HUDA.

" MR. R. BURN, I.C.S.

" " J. L. STONE.

" " W. H. SHARP.

" " G. W. KÜCHLER.

" " C. F. DE LA FOSSE.

" " J. C. GODLEY.

" " N. L. HALLWARD.

" " A. CHATTERTON.

" RAI BAHADUR PANDIT SUNDAR LAL, C.I.E.

Mr. A. G. WRIGHT.

" J. G. COVERNTON.

" J. A. RICHEY.

The Reverend Mr. HOLLAND.

" Dr. EWING.

Mr. ARUNDALE.

" MASANI.

Dr. ZIA-UD-DIN AHMED.

Mr. DIKSHIT.

" W. H. JAMES.

" K. SUBRAMANI AIYAR.

" H. SHARP.

Sir EDWARD PARROTT and Mr. V. P. MADHAVA RAO, C.I.E., also attended the meeting.

Present position of affairs in the Provinces.

Mr. Butler asked each Director in turn to state the present conditions in his province.

*Burma*.—Mr. Covernton said that under certain conditions religious instruction is permitted in government schools. In lay vernacular schools this instruction is given in ordinary school hours, in English schools outside school hours (lay vernacular schools are privately managed schools). There are village committees for district cess schools, "Rs. 500 schools" and some others, but not for other aided schools or *hpongyi-kyangs*. There is no difficulty in working the system save among Hindus and Muhammadans; and Government does not push religious instruction among these classes, though in a few cases they make their own arrangements. In Buddhist schools *hpongyis* are not infrequently asked to arrange the instruction; but sometimes the Young Men's Burma Association or other Burman societies are permitted to arrange for an instructor. The difficulty arises only where two sects of Buddhism co-exist; and in such cases laymen are ordinarily selected as instructors so as not to involve the clergy in sectarian differences.

*Bombay*.—Mr. W. H. Sharp said a local conference was in favour of placing a moral text-book in the hands of secondary teachers and that a gentleman had been selected to compile the book. This method could subsequently be extended to village schools; the vernacular text-books already contained many moral lessons. As to the question whether our educational system has broken down moral and religious ideas, all that can be said is that the more old-fashioned parents complain that now-a-days they cannot keep their sons in order.

*Madras*.—Mr. Stone said that no action had been taken and that outside aided schools religious instruction is not given though there is tendency in schools towards the introduction of hymns. There is no doubt some scope for direct moral instruction which should be orally given by the teacher.

*Eastern Bengal and Assam*.—Mr. Hallward said very little if anything had so far been attempted in the way of direct moral instruction in schools. The readers contain stories with a moral tendency. There is however a strong feeling, chiefly among Muhammadans, but also among Hindus, in favour of direct religious teaching. In some college hostels religious instruction is given, but not in schools. Mr. H. Sharp added that the feeling among Muhammadans is very strong and that there is a desire to have mosques or prayer-houses in connection with hostels, while a maulvi is generally selected as superintendent.

*North-West Frontier Province*.—Mr. Richey said he was not yet in a position to report; but moral instruction in that province would have to be religious instruction.

*United Provinces*.—Mr. de la Fosse said that a feeling was in the air that something should be done. The public are of opinion that moral instruction must go hand in hand with religious instruction and that moral principles must be based on religious sanctions. But religious instruction to be effective must be dogmatic, and this stood in the way of any general adoption of such teaching in public schools.

*Bengal*.—Mr. Küchler said that there is a fairly general feeling that the conduct of boys has degenerated from lack of religious instruction. Previously a system of such instruction was given in indigenous schools; but it has died out. In some schools, especially in Calcutta, an attempt has been made to revive it. There is nothing to prevent religious instruction being given in privately managed institutions. The fact that so little advantage is taken of this permission shows that the feeling is not strong. As regards government institutions there are difficulties. Compulsion could not be used, and the department would have to confine itself to benevolent encouragement. In Muhammadan schools the practical difficulties are not so great; and religious instruction is regularly given in schools following the departmental curricula, some of which are actually government schools. As regards moral instruction, the system proposed in Bombay would be suitable in Bengal. Systematisation is required if the sporadic efforts of individual teachers are to be made effective.

*Punjab*.—Mr. Godley referred to his note on the subject. In the secondary schools religious teaching is largely given by various bodies, Christian, Muhammadan, Sikh or Hindu. In board primary schools no religious teaching is given and the moral influence depends upon the master. As regards direct moral instruction, moral text-books have for long been in use in secondary schools but are generally used merely as readers.

*Central Provinces*.—Mr. Wright agreed with Mr. Godley as regards direct moral instruction but thought there was a growing feeling among villagers in favour of direct religious teaching, though not of moral instruction, in primary schools. This demand might be met along the lines followed in Burma.

2. Maulvi Syed Shams-ul-Huda said that the Muhammadan community greatly felt the need of direct religious instruction though they also appreciated the difficulties of Government. In elementary schools the question is of less importance than in higher schools, since boys in elementary schools generally live with their parents; but even in these schools moral instruction should be insisted upon and where possible religious instruction Opinions on the subject.

also. There may be difficulties in institutions where boys follow two different religions but not in denominational schools. As a boy grows older the question becomes of greater importance. He did not say that English education had caused degeneration; the reverse was the fact. But philosophy and science are disturbing forces and require the counteracting influence of religion. Wherever pupils of schools or colleges live in hostels, religious lectures should be arranged in the hostels. This is especially the case where boys of one religion, whether Muhammadan or Hindu, live together; and where boys of different religions are in a single institution, private aid should be invoked. If religious instruction is insisted on, English education will become more popular with Muhammadans. He was also strongly in favour of moral instruction at every stage of school education, and this should be imparted in the shape of inspiring stories. Religious education should where possible be given in addition. We should invite the production of books on religious and moral subjects and offer prizes for the best. As regards the introduction of hymns referred to by Mr. Stone he said that the singing of hymns would be most objectionable to Muhammadans, as the only form of prayer acceptable to Muhammadans is the recognised and orthodox *namaz*.

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blem.

3. The Right Reverend Bishop of Lucknow said that religious instruction is invariably given in the schools with which he deals and the boys thankfully receive it, though not accepting his religious views. The crux in Hinduism is that it is philosophical and ritualistic, and its practical application is difficult. A solution of this problem is being attempted only at Benares. But whatever be the religious views of the teacher it is well if the boys be taught that there is a God and that they should follow what is good; the main thing is that the teacher be in earnest. In government schools lecturers might be invited from time to time. A man can generally speak with some force on certain subjects; but the personality of the teacher is everything. Moral lessons are useful if given in the form of stories since these remain in the minds of the boys, such as the story of the good Samaritan.

4. Mr. Masani explained that under the old system in Baroda the *Niti-Bodh* had been used as a moral text-book, but it was found that it led only to cram. In 1904 a Committee decided that religious instruction is possible only in denominational schools. Muhammadan schools are visited for the purpose by maulvis or mullas. It is found that Muhammadans will not send their girls to school unless religious instruction is given. Hence mullas have to be maintained in these schools at Rs. 5 a month. In Jain schools also instruction is given. In other schools the *Sanatan Dharma* books written in English or their vernacular translations are used. It has now been decided to produce separate books for teachers and for pupils and such a book will shortly issue. In hostels where there are good superintendents, instruction is given from the books of the International Moral League, London. This is found to be successful.

5. Mr. Gokhale while recognising the growing desire for religious instruction thought that nothing worthy the name could be imparted in secular schools. No teaching which rests merely upon the basic principles of religion will be accepted by Hindus as taking the place of directly orthodox religion. An experiment was made by a very earnest man in Poona twenty years ago but proved a failure. The unsettling influences which are now complained of are due not to want of religious instruction but to other causes, those brought up in the most orthodox manner often displaying the most unsettled minds. The problem of moral instruction is altogether different, and he believed that moral lessons could usefully be instilled by a school teacher from a suitable book. In some schools the *Bhagawat Gita* is used both as a religious and as a moral text-book though in reality it is only the latter. In effect, moral instruction is possible but not religious instruction.

6. Rai Bahadur Pandit Sundar Lal put forward three propositions. (1) In elementary schools boys are too young for direct moral teaching. Stories conveying moral lessons and poetry will be found useful. (2) In secondary schools moral teaching in order to be effective must be combined with religious teaching and supported by the sanctions of religion. Such teaching is possible in aided schools but is difficult in government schools. (3) In colleges an experiment had been made in the hostels, but it was found that direct religious

instruction could not be imparted to Hindus save along general lines and that the time of the students was too full to permit of it. Lectures are attempted but do little good. To sum up, all that we should attempt is to teach morality by indirect methods in our schools.

7. Mr. Madhava Rao (previously Dewan in Mysore) said that religious instruction was introduced in the State schools in 1908. Though he had had little experience of it and could no longer speak with any authority (having retired) he could assert that this move had been welcomed in the Representative Assembly, especially by Muhammadans, and that it had been highly successful both in village and in secondary schools and among both Hindus and Muhammadans. No attempt was made to teach sectarian dogma or ritual to Hindus ; but the *Sanatan Dharma* series, which is unsectarian and which deals with the basic principles of religion, had been adopted. These books have, he believed, been found successful. Should they prove unsuccessful they would no doubt be revised. The instruction is imparted by the regular staff of the schools. The Muhammadan and Christian communities are very small in Mysore ; but wherever twenty boys professing either of these religions are found in a school the rule is that Government supplies them with a religious instructor. The instruction given is both moral and religious; and direct moral teaching without religious teaching is worthless.

8. Rao Bahadur R. N. Mudholkar described how, in 1905, a school had been started at Amraoti for combining instruction in the accepted principles of the Hindu religion with education suitable for modern requirements and moral improvement. The more thoughtful promoters had withdrawn from the scheme because it subsequently gave occasion to religious reaction and to political propagandism. The same had happened at Yeotmal and Akola. Mr. Sly had made an enquiry in the matter, the result of which was to show that it was generally considered that direct religious teaching was not possible in schools for Hindus.

9. Mr. Arundale described the system pursued in the Central Hindu College. Instruction is given distinctly in the Hindu religion but upon as broad a basis as possible. So long as the teacher is earnest and adheres to the text-books the college is not particular about his precise tenets and gives him a free hand ; but great care is required in selecting him from the point of view of character and experience. The instruction is compulsory, is given at the commencement of the school hours and consists of a quarter of an hour of prayer and talk on religious subjects in addition to the usual periods of religious instruction given in college and school during the week. He himself lectures on this subject in college and quotes from any scriptures to show that there is the same teaching in all religions. In the hostels special instruction is given in the *Bhagawat Gita* and in the performance of *Sandhya* ; and as far as possible use is made of voluntary workers who come for love of the work. There is also a school for the sons of peons and others which is partly taught by the students, though a paid teacher has now become necessary. This school is very successful. Teaching from text-books unconnected with religion cannot be effective. It is necessary to set up a personal ideal before young men ; and moral instruction cannot do this. He admitted that Government gave facilities for religious teaching but added that these facilities were not ordinarily understood.

10. Mr. Subramani Aiyar said that religious instruction is given in certain Parsee schools in Bombay city. He had introduced it into a large Parsee high school in Bombay of which he was Principal ; and there are also Sunday classes for moral instruction, the attendance at which is poor ; these classes are conducted by selected members of the 'old boys association' under the supervision of the staff. The boys in the high school were made to write essays on moral subjects ; but the teaching was not a success, because religion is not a subject for examinations and hence it does not pay the students to attend such classes. Examinations are the bane of education. (Maulvi Syed Shams-ul Huda here said that time should always be given to Muhammadan boys to attend prayer.)

11. Nawab Abdul Majid said that Muhammadans considered religious instruction should be given. The difficulty is how much may be done, as regards aided schools, by the recognition of *maktabs* and the increase of their numbers. In government schools there are maulvis and pandits who can give instruction

out of school hours; and Muhammadan boys should always be given time to say their prayers—a thing which is not always done. So far as Muhammadans are concerned moral teaching cannot be separated from religious instruction; but the ordinary text-books should contain direct moral lessons.

12. Dr. Zia-ud-din Ahmed said that moral instruction without religious instruction is a farce. In primary schools only direct religious teaching can be given; and this is possible only in denominational schools. The want of it is responsible for the comparatively slow expansion of education among Muhammadans. In secondary schools the teaching should be imparted in hostels; and the instructor should be a regular member of the staff. In colleges the difficulty is that religious instruction is expensive; but men of learning and piety may be invited to visit the institution and deliver lectures. Care must be taken in their selection; since if they prove irresponsible this might lead to undesirable results. If, on the other hand, we have to fall back on moral instruction, no single book will appeal to all classes, since Hindu stories are not acceptable to Muhammadans and *vice versa*. The special arrangement made for Muhammadans in Mysore is praiseworthy. It is true that Government gives facilities; but since parents are ignorant of the arrangements hardly any schools give religious instruction. He agreed that any prayer save the *namaz* is repugnant to Muhammadans; and he mentioned that the difficulty suggested by Mr. Subramani Aiyar had been obviated at Aligarh by making religious instruction compulsory; if a boy is weak in theology his promotion is stopped; if he fails to attend mosque five times a day fines are imposed.

13. The Reverend Mr. Holland said that in the Oxford and Cambridge Hostel at Allahabad, which is mainly tenanted by Hindus, the religious instruction is voluntary and imparted to the students individually. No difficulty is felt as regards lack of leisure for this purpose. About two-thirds of the students come for such instruction. Pupils and parents welcome the teaching of the Bible; and even when there is no idea of their sons becoming Christians parents request that their sons may have this instruction. The general effect upon the students is good. It is the personality of the teacher which is of paramount importance. He also laid stress upon the value of corporate life and of training in individual responsibility and upon combined games. Fleming's 'Lessons on Social Usefulness' suggested many ways in which students might be trained in social service such as teaching in night schools in the bazar in term time, helping forward education and sanitation in their villages in the vacation, and so forth. Such work would be a most potent moral education. He instanced the commencement of colleges at Oxford and Cambridge which were to begin simply with hostels, where the pupils and the teacher lived together under a common religious rule. This he said gives the idea for to-day. (Mr. Covernton mentioned that this last point was borne out by the monastic system in Burma, where previously after undergoing the *Shimpyu* ceremony, boys used to spend several Lents in a *hpongyi-kyang*. The tendency now however is to spend only a few days, the pupils hurrying into English education.)

14. Dr. Ewing said that the character of the teacher is the key to the situation. Moral teaching by means of special text-books is impossible. Improvement is possible along the line of selection of material for our readers. Such lessons handled even by an indifferent teacher will have effect, if handled by a good teacher will awaken enthusiasm. He had just become aware that the head master of a secondary school had written a book laying down the basic principles of religious and moral teaching as regards the family, etc. Such a book might do good; but if its introduction were deemed impossible the various communities should be allowed to suggest stories for inclusion in a book.

Religious teaching in indigenous institutions.

15. With reference to the question what was the form of general instruction given in *tols*, Rao Bahadur R. N. Mudholkar explained that these institutions dealt with the accepted forms of religion and not with new ideals. Rai Bahadur Pandit Sundar Lal said that the members of such institutions were few and hence the Pandit could impress his own views upon them—a thing which in larger institutions, composed of varying sects, was impossible. Mr. Gokhale said that the instruction was given only to members of the twice-born castes and was confined to the recitation of the *Vedas*. There was not much religious instruction as such.

Mr. Burn pointed out that the instruction is theological rather than religious.

16. The question whether special attention should be paid to moral instruction in training colleges led to a discussion upon the utility of organised games. Some of the members said that without prize-competitions games would lose their popularity. The general sense of the Conference was that games in themselves are good and efforts should be made to inculcate a real sporting spirit. The teachers should use their influence upon the boys; and, if the spirit of competition was found to be in excess, tournaments should be stopped. Effect of organised games.

17. Finally Dr. Zia-ud-din Ahmed raised the question of the treatment of *maktabs* and Koran schools throughout India. He said the problem had been satisfactorily solved in Egypt by the institution of committees, special inspection, the introduction of secular instruction counting for a grant, the opening of government *maktabs* staffed with maulvis of the old type but drawing higher grants if qualified in secular subjects, and insistence upon the teacher being drawn from the same class as the pupils. It was pointed out that in Bengal and in Eastern Bengal and Assam and also in the Punjab and Sind a policy closely approximating to this had been followed. Treatment of *maktabs* and Koran schools.

It was generally considered that where this is not already done such institutions might be encouraged by the giving of aid for genuine secular instruction.

# DIFFERENTIATION OF THE CURRICULA IN SECONDARY SCHOOLS.

Fourth day, Thursday, February 16th, 1911.

*Present.*

The Hon'ble Mr. S. H. Butler, C.S.I., C.I.E.
" " Nawab Abdul Majid, C.I.E.,
" " Mr. G. K. Gokhale, C.I.E.
" " Rao Bahadur R. N. Mudholkar.
" " Mr. R. Burn, I.C.S.
" " " J. L. Stone.
" " " W. H. Sharp.
" " " G. W. Küchler.
" " " C. F. de la Fosse.
" " " J. C. Godley.
" " " N. L. Hallward.
" " " A. Chatterton.
" " Rai Bahadur Pandit Sundar Lal, C.I.E.
Mr. J. G. Covernton.
" A. G. Wright.
" J. A. Richey.
Dr. Morris W. Travers, F.R.S.
Mr. T. S. Dawson.
" Masani.
Dr. Zia-ud-din Ahmed.
Mr. Dikshit.
" W. H. James.
" K. Subramani Aiyar.
" H. Sharp.
Sir Edward Parrott and Mr. V. P. Madhava Rao, C.I.E., also attended the meeting.

Existing School Final Courses.

The question of the differentiation of curricula in secondary schools was discussed with special reference to the note circulated by Mr. Orange on the subject and to the systems of school final examinations which have been established in various provinces.

2. *Madras.*—Mr. Stone described the school final examination in Madras. This is not so much an examination as a scheme of studies on the completion of which a certificate is granted. The course must be taken in the three higher forms of a high school and the pupil must complete at least six terms making an attendance of 60 per cent. of the working days in each. The headmaster maintains a certificate for each pupil in which he enters marks for school work and form averages. At the end of three years the pupil attends a public examination with a view to the completion of his certificate by the entry of marks gained in that examination. The pupil is usually examined in all the subjects of group A below and in one or more of those in group C. In the subjects of group B no examination is held. The certificate contains, however, a record of school work in the group B subjects as also in those of group A and such of the group C subjects as the pupil takes up.

The groups are as follows :—

A.—1. Elementary Mathematics.
2. English.
3. Vernacular Composition.

B.—1. Science.
2. Geography.
3. History of India.
4. Drawing.
5. Physical training (for boys).
Domestic economy (for girls).

C.—One or two of the following optional subjects:—
1. A classical or a foreign or a vernacular language.
2. History of England.
3. Algebra and Geometry.
4. Practical mathematics.
5. Trigonometry.
6. Botany.
7. Physics.
8. Chemistry.
9. Music.
10. Agriculture.
11. Commercial or practical geography.

A candidate may present himself afresh at the public examination in any subject previously taken up with a view to improve his marks or in a subject in group C not previously taken up. The examination is conducted by a Board on which Government is represented. The University is not represented as such but the approval of the Syndicate to the constitution of the original board was sought and obtained. Perhaps some arrangement to ensure the continued connection of the Board with the University is desirable.

The certificates when completed by the entry of the marks given in the public examination are accepted by Government as qualifying for public service provided they show good work in the subjects of groups A and B and in two subjects of group C not being shorthand nor typewriting. They are likewise accepted by the University, persons admitted by Principals of colleges on the ground that their secondary school leaving certificates show that they are fit for a college course being regarded as having matriculated. There is of course danger that Principals may make rash admissions. The Syndicate has power to frame rules in restraint of admissions and will exercise it if necessary.

No public examination has yet been held, but the beneficial influence of the scheme on schools is most marked. Moreover, the examination is popular—8,000 taking up the public examination as against 1,000 taking matriculation. This is due to the fact that the secondary school leaving certificate is necessary for government service, and that there is no examination in which a pupil can be said absolutely to have failed.

The question of the large choice of subjects under this scheme was raised. Mr. Stone explained that the choice is strictly limited by the circumstances of each school especially in the matter of teachers.

The science work under this scheme was likewise discussed. Mr. Stone admitted that some schools are teaching science without completely adequate laboratories and equipment. Government, however, are insisting on demonstration apparatus in each school, though they do not insist on apparatus for practical work.

Mr. Küchler said that in Bengal he would take the matriculation as the public examination and would introduce other features of the Madras system, especially the practical test in science. Dr. Travers pointed out that in Europe the tendency now is to eliminate practical tests in elementary science examinations (and indeed to do away with elementary science examinations altogether), because the only tests possible are analytical tests, the preparation for which has an adverse effect upon instruction. Instead, the proper staffing and equipment of schools are insisted upon, and guarantees are required that each pupil has fully completed the course. Mr. Küchler pointed out that if such reliance can be placed upon school records, all examina-

tions whether in science or in arts might entirely disappear; and he explained that in speaking of science he included physics and that he referred to a test in school laboratories, which he considered was of value.

3. *The United Provinces.*—Mr. de la Fosse said that the school leaving certificate examination in the United Provinces practically fulfils Dr. Travers' ideal. There is a system of marking written and practical work done in schools; the teacher keeps a record of what is taught and of the way in which it was taught; and an examination is held each week in one subject. There is likewise a final examination conducted by appointed examiners in the school, at which the examiners can call for all written records of work.

The examinations are conducted under the control of a central Board consisting of nominees of Government, of the University, of the Chamber of Commerce and of the Roorkee College. This Board selects examiners. There are from 10 to 15 oral and practical examiners, who are not Inspectors of Schools—*e.g.*, Dr. Hill of the Muir College is an examiner in science. No difficulty has so far been met with in securing competent examiners because only 35 schools at present take the courses, these being the better equipped high schools.

A pupil can present himself at the school leaving certificate examination or at the matriculation. In 1909 there had been about 4,173 candidates for matriculation and 325 candidates for the school leaving certificate examination.* The numbers presenting themselves for the certificate are limited by the limited number of schools recognised for that purpose. The examination is growing in popularity. Rai Bahadur Pandit Sundar Lal said that this is because there is an impression that the school leaving certificate is easier than the matriculation.

Mr. Küchler raised the general questions "to what extent these new examinations differ from the matriculation, and what is the reason for the institution of school final examinations." He suggested that the idea is to divert pupils from instruction under the University and to frame a course upon more modern lines. Mr. Burn suggested the practical value of examinations in the vernacular; and Mr. de la Fosse pointed out that for the school leaving certificate examination of the United Provinces no books are prescribed. (The Calcutta University also prescribes no books for matriculation.)

4. *Bombay.*—Mr. W. H. Sharp said that the school final examination in Bombay had just been revised and that a new examination would be introduced next year. The Director of Public Instruction appoints school final examiners: the University is likewise revising its matriculation.

The majority of the pupils prefer to appear for the matriculation; the weaker pupils choose the school final examination; and some take both examinations. The figures are—

| | |
|---|---|
| Matriculation . . . . . . . . . . | 3,500 |
| School final examination . . . . . . . . | 1,400 |

5. *Bengal.*—A school final course is contemplated in Bengal; but Mr. Küchler expressed himself fully satisfied with the Calcutta matriculation, though he would like to see oral and practical tests added to it.

6. *Burma.*—Mr. Covernton said that in the school final course for Burma a distinct syllabus was laid down for each subject. The examination consists of a written test supplemented by an oral test in English and vernacular and a practical test in science. There is no system for recording the work of the school terms, for there is a feeling that sufficient confidence cannot be reposed in the teachers to make such records of value, and this feeling is shared by the one Burman Inspector. He stated that the school final test in Burma is more difficult than the Calcutta matriculation, since it was found that those who passed the former all passed the latter in the first division, while some who failed hopelessly in the former passed the latter.

7. The general conclusions which emerged out of the discussion on these various systems were that the true *raison-d'être* and character of a school

* In 1910 the figures were—

| | |
|---|---|
| Matriculation . . . . . . . . . | 2,440 |
| School leaving certificate . . . . . . . . | 941 |

final examination are properly defined in paragraph 24 of "Indian Educational Policy"; that it was well that after twenty-eight years of discussion something had at last been done; that the movement at present is to limit the scope of the matriculation examination and to substitute for it departmental tests and departmental control; that the main practical difficulty to be surmounted lies in the insufficiency of the inspecting staff for conducting tests more or less informal over a large number of schools; that the best solution lies in some system of recording work checked by a public test; and that in order both to make such records of value and likewise to raise the whole tone of the work in high schools, the main requirement is the improvement of the school staff.

Technical instruction in secondary schools.

8. *Agriculture Training.*—The United Provinces offers an agricultural course; but no one takes it. Both the department of agriculture and popular opinion are opposed to it.

9. *Manual Training.*—Dr. Travers cited the examination of secondary schools in the London County Council. He said that the theory in England is that a boy should go through a manual course, not with a view to technical instruction or employment, but simply as a part of his general education. It was generally thought that technical subjects as such should not form any part of the secondary course, but that manual training should be regarded as an integral part of it.

10. *Shorthand and Typing.*—The question was discussed whether shorthand and typing are suitable subjects for an ordinary school course. These subjects are included in the Madras scheme; and Mr. Stone saw no reason for excluding them, provided that the pupil at the same time receives a sound general education, and provided there is some demand for men trained in these subjects. Mr. Gokhale and Mr. de la Fosse pointed out that generally speaking pupils are insufficiently grounded in English to take these subjects with advantage. Dr. Travers pointed out that this does not apply to Madras, where the knowledge of English is well-founded and widespread. The general (but not unanimous) sense of the Conference was that these subjects may be included in the secondary course.

11. *Commercial Subjects.*—Mr. Subramani Aiyar stated that in Madras not only are shorthand and typing well established, but also boys who learn book-keeping can obtain satisfactory employment; and that a pupil should go to a commercial school after completing the ordinary school course. In Bombay there are many private commercial schools which prepare pupils for various London certificates. At present the public do not understand the values of these certificates, which vary greatly. It is important that there should be an examination the value of which is fully understood. And if it is not possible for a pupil to attend a commercial school after his general course, then the proposed examination might be offered in high schools and as a part of the school leaving certificate examination.

Compulsory subjects.

12. The Hon'ble Rao Bahadur R. N. Mudholkar suggested that compulsory subjects should be definitely laid down for the school final examination throughout all the provinces of India. It should at least include drawing as an essential subject. Mr. Gokhale would prefer to leave the prescription of subjects to individual provinces and departments. As regards drawing, it was pointed out that we have not sufficient qualified teachers; and Mr. Masani suggested that manual training includes drawing.

Conclusion.

13. The general sense of the Conference was that the new school final courses in Madras and the United Provinces are on right lines, and it is satisfactory that something has at last been done; but it is necessary to go further and to improve the staff of our schools. This is at the root of the problem and is of the highest importance in view of the fact that a sound secondary education is an essential foundation whether for an Arts or for a Technical course in the college. Paramount, therefore, as are the claims of primary education, it would not be right to rely upon increase of fees and private support alone for the improvement of our secondary schools. The Directors generally put the improvement in secondary education in the forefront of educational improvement; and the Conference were emphatically of opinion that it cannot be left to look after itself and that it urgently requires liberal support from Government.

III.

Appendices; consisting of Papers circulated previus to the Conference or handed in by Member.

# PRIMARY EDUCATION.

### (1). *Points for consideration circulated to the Conference.*

1. What ought a school building *plus* equipment to cost in the different provinces and how far, in view of the financial situation, can it be reduced?

2. What is a minimum of efficiency on which we should insist in the different provinces and what will be the cost of attaining that efficiency in existing schools?

3. What arrangements are there for training teachers and what steps should be taken to provide an adequate supply of qualified teachers for new schools and what qualification should be insisted on?

4. What expansion is likely to be required in the inspecting staff?

5. What arrangements can be made to concentrate schools, and how far is it desirable to substitute board schools at centres for scattered privately managed schools?

6. How many new schools should approximately be provided for and at what cost?

7. Will existing Acts and rules suffice to secure adequate control over the expenditure?

8. What proportion of the grant should be allotted for primary education for girls?

9. What steps have been, or what (if any) further steps can be, taken to make primary education more practical?

10 What distinction has been or can be made between rural and urban education?

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### (2). *Questions regarding the differentiation of urban and rural schools, suggested by Mr. J. G. Covernton, Director of Public Instruction, Burma.*

(*a*) What should be the 'differentia'?

(*b*) What subjects should be taught in rural schools that need not be taught in urban chools and *vice versâ*?

(*c*) Should there be fewer subjects taught in rural than in urban schools?

(*d*) If so what subjects should be specially selected for rural schools and what can be safely omitted?

(*e*) Should the hours be different—in particular should they be less in rural schools?

(*f*) Should the conditions and rates of grants differ? Is a lesser scale of grant for rural schools, which teach fewer subjects or for fewer hours (or both), than urban schools, desirable or justifiable?

(*g*) Is it found in other provinces that special classes or persons object to separate rural standards on account of the supposed inferiority of status attaching to them? If so, to what extent does this impede the adoption or extension of such standards?

J. G. COVERNTON.

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### (3). *Questions regarding the control of the district inspecting staff for vernacular schools, suggested by the Hon'ble Mr. de la Fosse, Director of Public Instruction, United Provinces.*

In the United Provinces, district boards are in complete control of vernacular education and of the machinery for its inspection. It is chiefly in connection with the latter point that I should like to consult with Directors of Public Instruction in other provinces. I believe that in no other province are district inspecting officers still servants of the district board. The district inspecting staff would have been provincialised here also, but for the strenuous opposition of certain chairmen of district boards. Briefly the position is as follows in the United Provinces:—

Under the District Boards Act of 1906, section 42, sub-section (*d*), district boards must provide for the inspection of their schools, and by the rules framed in accordance with this section the control and direction of the work of deputy inspectors has passed altogether out of the hands of the Education Department into those of the board. The deputy inspector acts solely under the direction of the board. His tour programmes and those of the sub-deputy inspectors are no longer checked by inspectors or assistant inspectors; his inspection reports, diaries and travelling allowance bills, are sent to a member of the educational sub-committee of the district board; and his proposals relating to the management of schools are made direct to the board. He is prohibited by rule from corresponding with the inspector or assistant inspector on matters of policy and he is not allowed to bring to their notice cases in which the board is infringing standing orders of Government.

It is complained that the effect of placing the inspection of vernacular schools so wholly under the direction of boards has been to sever the chain of connection between the higher officers of the Education Department and the subordinate district inspecting staff and that the control which Government has hitherto exercised through the Educational Department over vernacular education has been subverted. The chairman of a district board, who is always also the collector and magistrate, cannot admittedly give to the subject of education in the district the requisite time and attention, while the member of the board—usually a non-official—appointed to examine the reports of the district inspecting officers and to scrutinize their diaries and travelling allowance bills is seldom if ever able to bring a trained intelligence to bear upon the work. The secretary to the board is almost always a deputy collector, appointed to undertake the work in addition to his ordinary duties.

Finally it is a frequent complaint of district inspecting officers that under the existing system all real authority has passed into the hands of the head clerk of the board's office, who in the name of the secretary issues instructions to the district inspecting staff regarding the management of schools and has control of the office establishment of the board.

On the other hand chairmen of district boards while they generally admit these defects urge that if the district inspecting staff were provincialised there would be no machinery for the administration of the schools; for, in practice at any rate, the deputy inspector though nominally only an advisory officer is the *de facto* manager of the schools. The deputy inspector is their staff officer for vernacular schools and under their authority deals with all points which are classed under management. If he were not a subordinate of the board, he would become a critic instead of an adviser. Departmental influence over the work of district inspecting officers, it is argued, can be exercised quite sufficiently, if, when the inspector or assistant inspector visits a district, one of the district inspecting staff is deputed to accompany him. It would weaken the position of the district officer if the district inspecting officers were not directly under his control, and it has always been a feature of the administration in the United Provinces that the position of the district officer should be paramount in his own district. The district board must have some subordinate responsible to it for inquiring into complaints against teachers; while in regard to finance a good deputy inspector can give great assistance to a board. If the deputy inspector ceased to be the board's subordinate, his responsibility for the careful preparation of the educational portion of their budget would be greatly weakened. Deputy and sub-deputy inspectors, freed from control, would be constantly taking exception to tactless and perhaps ill-informed inspection notes written in school inspection books by non-official members of the district board. Useful work by non-official members might thus be checked. It is advisable to do nothing which may result in weakening the interest of members of the board in education, and it is feared that members would cease to take any interest at all if the district staff were not subject to their control.

I have jotted down as far as I can remember them the objections which have been urged against the provincialization of the district inspecting staff. It seems advisable in the discussion of so complicated a matter to endeavour to arrive at a clear understanding of what should be classed under the head 'management' and what under the head 'inspection'. Under the head 'management' may be included the following :—

(1) establishment of new schools ;
(2) abolition of schools and alteration of standards ;
(3) construction and repair of school buildings ;
(4) equipment of schools with books, appliances and furniture ;
(5) formation of school committees and framing of rules for their duties.
(6) appointment, transfer and removal of teachers ; their promotion and reduction, fines and rewards ;
(7) revision of salaries and grants-in-aid ;
(8) determining the rates of fees and exemptions from payment of fees ;
(9) fixing the number and value of scholarships ;
(10) payment of staff and compilation of returns.

*Inspection.—*

(1) Reporting upon the methods of teaching and the tuitional results ;
(2) checking school registers and accounts ;
(3) checking fee accounts and lists of free scholars ;
(4) reporting on the state of buildings and equipment ;
(5) ascertaining whether the rules in the Code of Education are being complied with.

What I wish to learn from the Conference is how in detail the management of vernacular schools as above is provided in provinces in which the district inspecting staff is provincial. It has never been proposed by the Education Department to deprive the boards of the management of schools, for it is recognised that a district board is the proper authority to manage vernacular schools, since it maintains them out of its own funds. But it is contended

by the Department that the present arrangement under which the district inspecting staff are servants of the Board is defective in the following particulars :—

(1) The supervision of the work of the inspecting staff is inadequate, especially in so far as their work is of a technical nature.

(2) The district staff is losing touch with modern educational aims and methods owing to its being cut off from direct communication with the Department.

(3) Government has at present no agency for ascertaining that the rules and principles laid down are actually carried out in schools managed by district boards.

(4) There is extreme difficulty in arranging for the suitable distribution of district inspecting officers while they remain the servants of the board.

(5) There is great discontent among district inspectors with their present position and with the unequal way in which promotion is meted out, and this is adversely affecting recruitment.

The provincialization of the district inspecting staff would no doubt obviate all these defects but how can it be brought about without weakening the machinery of district boards for the management of their schools? Should the deputy inspector have an office separate from that of the board? If so, what, if any, functions of management should he discharge? Should he discharge them in accordance with powers delegated to him by rule, or should he act only on written orders from the board in each case? What should be his relations with the chairman of the district board, and to what extent should he be subordinate to the divisional inspector of schools?

C. F. DE LA FOSSE.

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### *(4). Question regarding Government of India grant for primary education suggested by the Hon'ble Mr. J. C. Godley, Director of Public Instruction, Punjab.*

On what principle is this distributed in other Provinces? Do Municipalities share in it? Is not the principle of disbursing lump sums radically unsound and an encouragement to wastefulness, *e.g.*, a local body spends in a hurry in order to justify a future claim?

J. C. GODLEY.

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### *(5). Note on the Registration of Monastic Schools in Burma and improvements in their Teaching, by Maung We Lin.*

Differences in certain religious tenets have led to the division of pongyis in Burma into two sects, Kams and Dvaras. They are also known as Mahagandis and Culagandis in some places. The Kams or Mahagandis form roughly two-thirds of the order of priesthood and are more liberal in their views, and, as the bigot would assert, freer in their intercourse with the world. Ninety per cent. of the pongyis who have conformed to our standards of instruction belong to that sect. As regards Dvaras or Culagandis who lead stricter lives, they are in the minority and we can leave them alone.

Religious grounds given out by pongyis for holding aloof from the Government system of education, are being demolished as the demand for education increases. Conscientious monks now-a-days would no longer compare Arithmetic, Geography or Elementary Science to Tiracchana Vijja or Lokayata, sciences that obstruct the path to Nirvana. The Thathanabaing himself has promised not to oppose the system. The old generation of pongyis is passing away and we are having in their place more up-to-date ones, who realize the fact that, even if religious instruction is to be the curriculum of the monastery, they must have secular work along with it if they are to retain a sufficient number of pupils with them. We should, therefore, have no fear of not getting pongyi-Kyaungs on our list. Want of influence or tact, which we have over and over again heard of, on the part of itinerant teachers who approach pongyis will be no bar to our object. Pongyis, I believe, will come in without being persistently asked.

The difficulty lies chiefly in drawing up a syllabus to suit the monasteries and getting teachers for them. The compulsory subjects laid down in the Code for Standards, Infant to VII, in all vernacular schools are :—

(*a*) One of the recognised vernaculars.

(*b*) Arithmetic.

(*c*) Elementary Science and Object Lessons, or Geography and Pali for monastic schools. Elementary Science and Object Lessons and Geography for lay schools.

(*d*) Kindergarten and Object Lessons for the Infant Standard.

Let us see if the pongyi can cope with the work set down for him. Excluding the duties which he owes to his dayakas as occasions arise, such as administering religious precepts,

consecrating ahlus, officiating at funerals, etc., the daily work of an average Kyaung, where secular instruction is imparted, is as follows :—

6 A.M. to noon—Prayer, morning meal, reading and recitation of religious literature, alms collecting and second meal.

Noon to 4-30—Secular education (with an interval of one hour).

4-30 to 7 P.M.—Miscellaneous out-door work and dinner for the pupils.

7 to 7-30 P.M.—Prayer.

The Kyaung can thus devote only three or four hours daily to secular education, and a curriculum such as the one stated above is, to say the least, oppressive. At the same time, it cannot be reduced to such an extent as to absolutely debar a pupil of any class in the monastic school from joining a corresponding class in the lay school. Thus we cannot altogether do away with Geography, although it is the stumbling block to the ordinary pongyi; but we can safely defer its teaching to a later stage of instruction, *e.g.*, Standard IV. The subject can then be distributed as follows :—

*Standard IV.*—The present Third Standard course.

*Standard V.*—India and a general Geography of Asia.

*Standard VI.*—Asia and a general Geography of Europe.

*Standard VII.*—Europe and Africa.

By the way, I am not sure if the same arrangement should not be followed in lay schools as well.

The bulk of the monastic schools does not go beyond Standard III, and so, according to my suggestion, will not be hampered with Geography. Those that aspire to higher standards may be presumed and expected to be able to teach the subject.

The other subjects which pongyis loathe to teach are Kindergarten work and Object Lessons. Even in lay schools these subjects are taken under considerable pressure from inspecting officers and with much reluctance on the part of the managers, and, as the work is left in the hands of unskilful assistants, the inferiority of the product may be imagined. I would therefore suggest dispensing with the subjects altogether in pongyi-Kyaungs. A departmental circular does in fact excuse pongyis from teaching them for the present, but our policy, as I understand it, is to induce them ultimately to conform to the prescribed syllabus in its entirety.

Pali is generally considered a favourite subject in monastic schools. We hear it recited even by pupils who have just finished their thinbongyi. A closer scrutiny of the method adopted, however, reveals the fact that there has been no proper teaching of the language. What we hear from the pupils is merely Pali words with Burmese translations. It is too early to begin the teaching of that language in Standard III. We might begin it in Standard IV.

Elementary Science with object lessons has been laid down as an alternative to Geography and Pali, but experience shows that an average pongyi-Kyaung can and will never have the necessary apparatus for teaching Science.

To sum up my suggestions as to the curriculum in monastic schools—

(*i*) The compulsory subjects should be limited to the "3 R's", as prescribed in the Code.

(*ii*) In Standards IV and upwards, Geography, as suggested earlier, and Pali may be added.

(*iii*) There should be no Infant Standard.

As regards providing teachers for monastic schools, I would leave the pongyi to his own resources. There should be no difficulty about teaching the simpler curriculum suggested above. The proposal to appoint one assistant teacher for a group of 5 or 6 schools, savours of the present itinerant teacher system which we are anxious to get rid of. If assistance is needed in any school, none but a whole-time man will satisfy the need. Where such a man is engaged a half salary might be awarded, the amount depending on his qualifications and on the extent of funds available. If the pongyi is unable or unwilling to teach, he should find a competent teacher to do the work for him. If he is unwilling to make any arrangement himself for the education of his pupils, his school is not fit to be on our list.

Appointing sub-inspectors in place of itinerant teachers will be a change for the better, at least from one point of view. The former as inspecting officers will command greater influence and be more respected than teachers on similar salaries. Pongyis will listen to their advice more readily than to that of teachers.

One point which should not be lost sight of in dealing with monastic schools is the desirability of examining them during the most favourable season of the year. Neglect in this direction has brought about the collapse of many a promising institution. I need not here enumerate the various causes that lead to the total or partial suspension of work in the monastery. Suffice it to say that the school is in full swing only in four months of Lent (July to October). After October the attendance dwindles gradually, so that in January and February we seldom find one-third of the total number of pupils on the rolls. Efforts should therefore be made to examine the monastic schools during the months of September and October.

A. great deal has been said about the manner of disbursing grants to pongyis. The rules of Vinaya have been brought to undue prominence and monks have been upbraided for receiving grants from Government in money and not in kind. But those who raise the outcry forget that the *sanghas* can very well be left to themselves for observance of the rules of Vinaya. If they choose to accept money through their *Kappiyadayakas*, we need have no scruples about their having broken their vows or not. Again, would it not entail unnecessary trouble to make out and give the exact articles which the pongyi needs and deserves ? Is the pongyi himself sure of what he will be in need of from time to time during the year ? No serious objection has ever yet been taken by the actual recipients of the money, at least in Lower Burma, to the present method, and I would not advocate a departure from it.

MAUNG WE LIN.

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*Monastic Schools.—*

(*i*) Registered—2,781.

(*ii*) Unregistered—14,856.

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## (6). *Note on the establishment of Board Lower Primary Schools in Eastern Bengal Districts, by the Hon'ble Mr. H. Sharp, Director of Public Instruction, Eastern Bengal and Assam.*

The present note and the system which it describes apply to the districts of Eastern Bengal only. In the districts of Assam, the great bulk of the lower primary schools have always been board schools. In Eastern Bengal, at the time of the formation of the new province, there was hardly an elementary school which was not a privately managed institution, either aided by the board, or unaided. The reasons for this difference are obvious. Assam is comparatively a wild country, undeveloped, sparsely populated and hence possessing but a slender foundation of indigenous educational institutions. The task of pushing elementry education in the villages could not be left to private enterprise. In Eastern Bengal, on the other hand, education has always been keenly sought after by large classes of the people ; and it was possible to utilize existing schools. The process is still going on in the case of *Maktabs*, large numbers of which are now adopting a semi-secular course of instruction. Secondly, the number of schools in Assam was not so great (excluding the hill districts there was one school per every 14·18 square miles) as to prohibit management by the Local Boards, or the expenditure of such sums upon each school as are suitable in an institution maintained by a local body. In Eastern Bengal, on the other hand, there were in 1906, 14,627 primary schools (excluding the Chitagong Hill Tracts) and, on the average there was one school per every 2·71 square miles, varying from one per every 1·3 square miles in the Tippera District, to one per every 6·3 square miles in the Jalpaiguri District.

2. With the funds available, it was impossible to finance these schools in a manner calculated to bring them under departmental control and to render them adequately efficient. The public funds annually expended on them amounted to R2,72,921. Hence each school received a dole averaging R18·6. In many cases a school would receive only eight annas a month. The sources of income for the teacher were fees, the produce of his land (if he was of the village) and free board and lodging (if, as is often the case in the more backward districts, he hailed from another locality).

3. As a result, the schools are very poor affairs. They frequently posses no building of their own, but meet in the narrow verandah of a private house. They possess no equipment. The teacher is almost always untrained. An attempt is indeed made to follow the departmental curriculum, but less for the sake of the paltry grant than for permitting pupils to compete at the scholarship examinations. But apart from the "three R's," really very little is taught, geography, object lessons and drill being for the most part neglected.

4. The main source of the income of these schools is fees. These are almost universally charged. The parents of the children are petty *Jotdars* or fairly well-to-do tenants ; and there seems no difficulty in collecting the fees. The rates are not fixed by rule and are generally low. Probably a higher rate could be charged without inflicting hardship. The number of boys in each school, however, is small, averaging only 27. The fees collected in lower primary schools amounted in 1905-06 to R4,57,846 ; the amount contributed from public funds was R2,72,921, and from other sources R1,02,592. Hence each school cost annually R56·9. Thus the number of pupils was about half of what a school can reasonably contain and instruct ; and the emoluments were likewise about half of what an elementary teacher may reasonably expect.

5. For these reasons, the profession of village teacher is not attractive. Many of the *gurus* are men of the poorest qualifications, only just capable of reading and writing. Frequently those who found themselves unable to earn a living in their own districts would repair to the less thickly populated districts of the Rajshahi Division and there set up schools. Such institutions, however, are ephemeral and hence unpopular. Where the master is a local

man possessing slightly higher qualifications, the state of things is better. In the larger villages the post of *guru* carries a certain status and hence is sought less for the pittance which it brings than as giving the holder a definite standing in the community.

6. This state of things is highly unsatisfactory, involving, as it does, waste of energy, dissipation of funds and inefficiency. And it was decided to utilise the main part of the imperial grant of R3,33,000 which fell to the share of Eastern Bengal at the time of the formation of the new province in establishing a certain number of board schools throughout the districts. To abolish the aided system or to modify it to any large degree is impossible. The funds available would have made no impression if spread over the vast number of existing schools. It was, therefore, decided to concentrate upon a few ; and the first intention was to establish 2,500 lower primary board schools, which together with 2,200 existing upper primary schools (which it is hoped eventually to improve) would form a network of 4,700 schools over an area of 39,766 square miles ; the schools being, so far as possible, arranged with a view to having one good school per every 9 square miles. The objects aimed at in the scheme were as follows :—

(*i*) To place it within the power of every child to attend a reasonably well-staffed and well-equipped school.

(*ii*) To cover each district with a network of decent schools which should serve as models and bring home by contrast the shortcomings of the previously existing system.

(*iii*) To bring elementary education within the reach of children dwelling in backward areas, which, notwithstanding the close distribution of schools, had remained for local reasons practically uneducated.

7. These proposals were made in September 1906. In the following year funds were placed at the disposal of the boards for the erection of a certain number of the proposed institutions and for the maintenance of them by means of special capitation grants and residual grants at the close of the year. The whole scheme was at first regarded as tentative. Its success soon justified its continuance, and the policy is now being steadily pursued—though in the light of experience the system of distribution and of maintenance has been modified.

8. The scheme, as it is being now carried out, is as follows. The board, in consultation with the inspecting staff, decides what existing schools are sufficiently central and successful to justify their conversion into board schools or where altogether new schools should be established. Programmes have been drawn up to be carried out through a number of years until the necessary number of schools has been erected. The board schools to be taken up in each year having been decided upon, the first thing is to obtain land for the schools. Proprietors or tenants are generally willing to hand over plots of land to the board for this purpose. As a legal title is necessary, type deeds have been supplied to boards. In the case of tenants who do not possess occupancy rights, the concurrence of the superior landlord has likewise to be obtained. In cases where land cannot be obtained or the existence of a large number of landlords creates legal difficulties, the land would have to be acquired ; but no such case has as yet occurred. About half an acre of land is generally taken for a school.

9. For the erection of buildings, a solid grant is annually made to each board—on the supposition that each building will cost, approximately, R500. Some local contribution, however small, towards this sum is insisted upon in all but the poorest localities and is readily given. When the scheme was initiated, a number of type-plans were circulated to the boards. To prescribe a single type-plan would be impossible owing to the necessity for using different materials in different localities. Moreover this is a matter in which boards may reasonably follow their own inclinations within certain limits. The available material varies from wooden frames and bamboo matting in one district to mud or rough masonry in another. The building rates vary considerably. In some areas, masonry plinths are possible ; in others their cost is prohibitive. The roof is invariably corrugated iron with a thick ceiling to reduce the temperature. The interior floor space is generally from 450 to 500 square feet, and there is always a small verandah in front. In some boards the work is done by contract, but the best results are obtained where the villagers themselves erect the school, since there is then no scamping and material is supplied at specially low rates. Some boards have found it worth while to employ a special sub-overseer for the supervision of these works.

10. So far as funds are available, each school is supplied with equipment at a cost of about R70.

11. The scheme being a new one, the question of repairs has hardly arisen. It is hoped that the villagers will see to the up-keep of the school houses ; but boards have been asked to include probable estimates for this object in their general estimates of expenditure.

12. It is calculated that a single teacher will be able to instruct a school of 50 pupils. Should the number rise to 60 or more, a monitor, who has passed the Upper Primary standard, and who shows an aptitude for teaching, is maintained. The pay of the teacher is provided as follows. The grant previously made to the school as an aided school is continued to it as a board school and is supplemented by such other funds as the board can find from its available resources. This grant may be reckoned as about R3. A special grant for each of these schools at the rate of R4 is annually given to the board. Hence the fixed income of the teacher is R7. The average fee paid by a pupil is about R1-7-0 per annum. If 50 pupils are assumed in a school,

the monthly fees taken may be reckoned at R6. Hence the emoluments of the master are R13. If, however, a teacher is untrained, his guaranteed salary is put at R5 instead of R7. In addition to this, the monitor (if a monitor is required) receives R3 from the board, for which a special grant is given. And it has been suggested to boards that a teacher should hand over eight annas to the monitor out of fees for every 10 children enrolled over and above 50.

13. Wherever possible, committees of management are established, the nomination of members being approved by the Chairman of the Board on the recommendation of the District Deputy Inspector of Schools. Such committees should have no legal status as regards the school property, but they should :—

(*a*) Arrange for and execute (if possible) repairs to the building.

(*b*) Consider the fee rates in individual cases and bring them to the notice of the Sub-Inspector.

(*c*) Aid the Sub-Inspector in the selection of monitors.

(*d*) Supervise the general working of the teachers.

(*e*) Determine what shall be the working hours of the school, subject to any general orders of the board as to the minimum length of the school-day.

(*f*) Arrange the sowing and reaping or other vacations, subject to the general orders of the board.

(*g*) Grant casual leave to the teachers up to a maximum of three days at a time and ten days in each period of twelve months.

Probably the school committees may eventually be made identical with the panchayat committees.

14. Instructions have been issued to boards on minor points, such as maintenance of registers, etc. But within broad lines the working out of the scheme is left to the boards themselves. Regulations regarding such matters as the fixing of fee rates have been studiously avoided.

15. There are two points of importance which are intimately connected with the scheme. The first of these is the distribution of schools. Although schools are closely spread over most of the districts of Eastern Bengal, certain areas have been left largely unschooled. The reasons for this are that in jungly or *beel* country, the higher caste Hindu is less numerous. The people are, therefore, less alive to the necessity for education and the inspecting officers are less likely to encourage the growth of schools where the population is comparatively depressed and where touring is a matter of great difficulty. Even under the 9 square mile rule described above, a tendency presented itself to congregate schools in the better villages. A more mechanical system of distribution was accordingly decided upon, and one which fits in with the scheme of village self-government. The method of distribution is now to provide each panchayati union which does not already possess a good aided upper primary school with a board lower primary school. This modification will probably effect but little change in the actual number of schools to be erected, since the area of a union may probably be taken as fairly equivalent to the 9 square mile section previously decided upon. The preparation of maps indicating the union boundaries, however, has been only recently commended ; and though some districts have completed the maps, local difficulties have delayed the work in other places. With a view to keep a check over the distribution, each board is annually required to send in a map showing the boundaries of the unions and, by fixed marks, all upper primary schools, such upper primary schools as are held to serve a union in place of board lower primary schools, and board lower primary schools either contemplated or already constructed. A specimen of such a map is appended. At the same time, a form is filled in showing the numbers of each union and the name and permanent serial number of each school, whether upper primary or board lower primary, which is to serve a union. If the school is completed, the date of completion is added, otherwise the year in which erection is proposed is indicated. These maps and returns form an interesting record of the programme of each board and of the progress annually made. When all the maps clearly show the union boundaries they will be still more useful. It is expected that such maps will be available for all districts by the 1st of May 1911.

16. The second is the distribution of funds. On the 1st of May, each year every District Board is required to submit a form showing the normal expenditure of the board on primary education previous to the first distribution of the special grants, the amount of special grants received during the past year, the actual expenditure during the past year and the estimates for the forthcoming year. Should it then be found that a board has failed to spend the required amount (as made up from local funds and ordinary and special provincial contributions.), the special contribution for the current year is reduced by a sum equivalent to the amount under-spent during the last year. Similarly reductions are made if the estimate of the boards are not up to standard ; but here subsequent grants are made to any board which undertakes to rectify its estimates and to reappropriate. These returns have been found to exercise a very wholesome check on the expenditure of boards, and failure to spend the required amounts is at once brought home to a board by reduction of its subsidy.

17. The scheme of establishing board lower primary schools has now been in force for some three years. From 250 to 300 schools have been established in each year. In the two

first years, 575 such schools were erected and established as board schools. The scheme is not unattended by difficulty; and the main difficulties have been the following :—

(*i*) In some districts, the scheme was regarded with suspicion. Contributions were not forthcoming and gifts of lands were refused. Such districts, however, were few and they were generally the more backward districts. Experience of the system has shown that Government had no sinister design in establishing board schools; and the advantage of such institutions was so apparent that suspicion has altogether been removed and the scheme is now welcomed with enthusiasm.

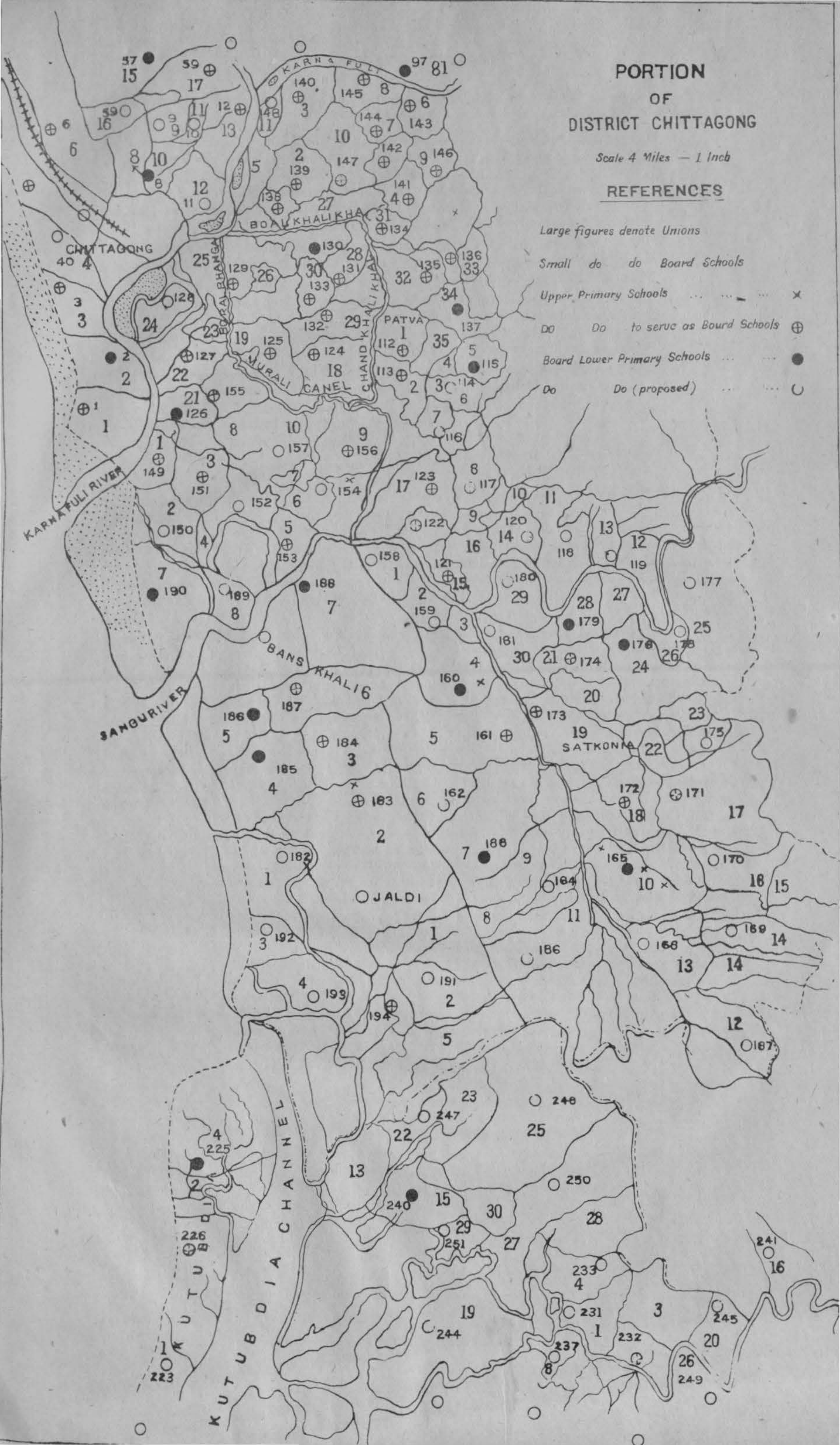
(*ii*) There were legal difficulties regarding the gifts of lands. It was found that some boards accepted tenant rights without the concurrence of the superior landlords. Definite orders have issued on this point.

(*iii*) The receipt of large additional grants was so novel a thing to the boards of Eastern Bengal that some of them at first found difficulty in spending the money. The institution of the returns detailed above has, however, had an excellent effect; and expenditure is now proceeding steadily.

(*iv*) Another difficulty has arisen from the novelty of the idea of board schools. This is not yet wholly removed. Though a board school is defined as one of which the site and the building are the property of the board and of which the management rests with the board, yet so strongly engrained is the aided system that boards find it difficult to realise that the schools are actually their possession and that they are at liberty to appoint the teacher and to eject him should he prove unsatisfactory.

18. On the whole the scheme has succeeded beyond expectation. Boards are now, with few exceptions, fully spending or overspending the amounts required of them. The people have come forward in many districts with offers of land and of contributions far in excess of the number of schools which the board can annually undertake. The schools themselves, so far as I have been able to see, are numerously attended. The people are alive to the advantages of improved education; and, though full statistics are not available, it has frequently been found that the numbers of a school have doubled as soon as it was converted into a board school.

19. It is unnecessary here to deal with the question of finance. But it is obvious that, as each year produces its batch of schools, the amount of money to be contributed towards recurring expenditure will increase. And, unless other sources of income can be tapped, the annual capital outlay will have to be curtailed. This has been considered; and an attempt is being made to concentrate the energies of the boards upon the larger and better schools. Obviously the greatest care has to be exercised in this matter. For the system of board schools is intended to supplement, not to supplant, the aided system. Moreover, any attempt to withdraw grants wholesale from privately managed institutions would not only be much resented, but would no doubt cause hardship and possibly also shrinkage of the numbers attending elementary schools. Hence, grants can be withdrawn from those schools only which are superfluous— and there is no doubt that many are superfluous. In one division, in 1908-09, Board aid was withdrawn from 349 schools, of which 244 at once disappeared and were not missed. But, at the same time, this reduction is masked by the rapid growth of new schools in areas where they are required. Rules are now under the consideration of the Local Government which will institute a firmer control over the recognition of superfluous and ephemeral institutions. But the question is a difficult one; and the improvement of the privately managed school is, owing to the large numbers, a formidable problem. For the present, efforts are being concentrated upon the establishment of board schools.


PORTION
OF
DISTRICT CHITTAGONG
Scale 4 Miles — 1 Inch
REFERENCES
Large figures denote Unions
Small do do Board Schools
Upper Primary Schools ... ×
Do Do to serve as Board Schools ⊕
Board Lower Primary Schools ... ●
Do Do (proposed) ... ◌
KARNAFULI
CHITTAGONG
BOALKHALIKHAL
BORALBHANGA
MURALI CANEL
CHAND KHALIKHAL
PATVA
KARNAFULI RIVER
BANSKHALI
SANGURIVER
SATKONIA
JALDI
KUTUBDIA CHANNEL
KUTUBDI

# TECHNICAL AND INDUSTRIAL EDUCATION.

## *(1) Copy of a Resolution proposed to be moved in the Imperial Legislative Council, by the Hon'ble Rao Bahadur R. N. Mudholkar.*

That this Council recommends to the Governor General in Council that the Government of India do appoint a Committee of qualified officials and non-official persons to inquire and report upon—

(1) How far there is a present demand for instruction in railway engineering, marine engineering, ship building and navigation, mining engineering and mining chemistry, metallurgy and metal manufacture, the different departments of industrial chemistry and the higher courses in mechanical and electrical engineering and textile manufacture.

(2) How far such demand is or can be met by existing institutions with their present staff and equipment.

(3) Whether and how far further and better provision can be made by developing these institutions and by securing for them the co-operation of workshops and establishments belonging to the State, or local authorities, public corporations or subsidized companies.

(4) Whether it would be necessary to create any new institution for any of these purposes;

And do further instruct such Committee to make definite proposals for giving effect to their conclusions should they be of the opinion that action on the part of Government is necessary or desirable.

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## *(2) Note by the Hon'ble Rao Bahadur R. N. Mudholkar.*

The demand for instruction in the technique and practice pertaining to a craft, trade or industry has to be determined from—

(*a*) the present condition and immediate potentialities of the craft, trade or industry;

(*b*) the hold it has got on the minds of the people;

(*c*) the scope it affords for employment;

(*d*) the nature of the facilities existing for acquiring the requisite knowledge and skill;

(*e*) the desire displayed to go to foreign countries to obtain instruction;

(*f*) the importance of the industry to the country and other like factors.

What has to be found out is not merely, whether there are any applications made by students or their guardians for the opening of schools or classes in particular departments of technology, but whether the prospects of an important and valuable industry require such knowledge. Before the Victoria Jubilee Technical Institute of Bombay established courses in mechanical and textile manufacture there were no formal applications from would-be students or their guardians. Some of the leading men in the country saw the advantages which would be derived and advocated the establishment of the courses.

In regard to what is said about there being no demand for instruction in marine engineering, ship-building or navigation, it should be remembered that there is no institution where such instruction is given and therefore the would-be pupils are not coming forward. Similarly, when it is said that mining classes for giving instruction in mining are not well attended, or that little appreciation of mining chemistry is shown, it is necessary to enquire (*a*) what kind of instruction is given and how far it is practical, and (*b*) whether the limited facilities afforded by the mines themselves are not fairly availed of.

The industrial surveys, carried out in some of the provinces, and the information given by the census reports, the administration reports, the gazetteers, the monograms and other papers and publications issued under the authority of Government, give us now a fair idea of the manufactures, industries and trades existing in the country, in what condition they are, their importance to the country, and their prospects and potentialities. Keeping agriculture aside, as it is being dealt with in provincial institutions and the Institute at Pusa, as also artistic wares, the following great manufacturing industries demand attention.

I. The Textile industries.

(1) Cotton,

(2) Silk,

(3) Woollen,

as carried on (*a*) with the aid of power driven appliances, or (*b*) manual operations

(*i*) in the processes preliminary to the actual manufacture,

(*ii*) the actual manufacturing ones, and

(*iii*) those pertaining to the finishing and beautifying of the present article (bleaching, printing, etc.)

II. Mining industry.

III. Metal Industries—(the preparation of metals from ore and manufacture of articles therefrom).

IV. The chemical industries—

A. Oil and fat industries—extraction and refinement of oil suited for the different purposes of eating, illumination, lubrication, etc., the preparation of paints and varnishes, soaps, candles, etc.

B. Sugar.

C. Tanning and leather manufacture.

D. Glass.

E. Essences, perfumes.

V. Pottery, glazing lacquer work and other miscellaneous things.

VI. Machine manufacture.

VII. Locomotion on land (railway and tramway engineering, automobiles, etc.)

VIII. Sea-trade (marine engineering, navigation, ship-building).

IX. Mechanical engineering.

X. Electrical engineering.

We have to see whether there are adequate facilities for turning out the proper class of managers, engineers, masters of departments and foremen, and if there are not, what should be done to secure them.

To guard against misconception, I would state at the outset that I do **not** deny the value of what has been done by Government till now and am not wanting in my appreciation of it. But the leeway which has to be made up is so great that it is necessary to concentrate our attention on what remains to be accomplished.

### *Cotton textile manufacture.*

Note (*i*) subject (*c*) prepared by the Hon'ble Mr. Sharp, Director of Public Instruction, Bombay, shows what has till now been achieved in that Presidency, in regard to textile manufacture. That is the province where manufacturing activity is displayed most by Indians and where greater efforts have been put forth both by the Government and by the people. Taking the highest and best existing institution, the Victoria Jubilee Technical Institute of Bombay, the class of men turned out though far superior to those who have got empirical knowledge by mere working in mills do not in the majority of cases come up to the standard of those who are brought from England and other western countries. There are a few really good men among them but the majority have not had the advantage of that advanced theoretical instruction and practical training which is needed in these days of hard competition when men of high attainments are employed by American and European manufacturers. This is practically admitted in the closing part of the note which suggests more advanced courses in regard to principles and greater and more varied practice. The necessity for this is I know felt by many a diploma-holder of the institute who even after 4 or 5 years of actual work subsequent to taking their diplomas show keen anxiety to be sent to Europe or America for raising their qualifications.

It would be a great mistake, however, to abolish the State scholarships. They should be given to those who have gone through the advanced courses advocated and have further put in 3 years' experience. It would be better to style them Fellowships.

### *Mechanical and electrical engineering.*

The case of mechanical engineering and electrical engineering is exactly on a par with this. Advanced courses and more varied practical training is required. In regard to mechanical engineering and machine manufacture the institutes at Bombay, Poona, Calcutta, Madras and other places where there are large railway workshops or Government dockyards or Public Works Department workshops should be afforded the facility of sending their advanced students to these establishments to do practical work and increase their experience. Out of thirty-three thousands of miles of railways nearly three-fourths belong to the State and above

a third of these are worked by State agency. There ought to be no difficulty in getting at least the agencies working the State lines to admit to their workshops students of Government and aided institutions.

The Public Works Department say that the demand for highly qualified mechanical and electrical engineers is so negligible as not to justify the employment of an improved staff or the appointment of an expensive committee of enquiry. This position ignores well established facts. There are some 242 cotton mills with about 60 lakhs of spindles and 75,000 looms; 57 jute mills with over 6 lakhs of spindles and 30,000 looms; about 1,100 cotton ginning and pressing factories; 130 jute presses. Then there are oil mills, sugar factories, etc., and then there are the railway workshops, the dockyards. In 1909, there were about 2,500 factories owned by individuals or private companies which were worked by mechanical power. The owners of most of the well managed ones would be glad to put them in charge of superior engineers if they can be had on reasonable terms. Many large establishments import their engineers, mill managers, spinning and weaving masters, their textile chemists and other expert staff from Europe. Others are obliged to be content with less qualified persons.

## Mining.

### *Mining engineering.*

Note (*iii*) shows that though classes have been opened at Sibpur the course is not a full collegiate course. It is only an apprentice course like that for a Public Works Department overseer. Several essential features of Mr. Heaton's scheme have not been accepted: the classes are mainly for Bengal students, many of the requisite things have not yet been supplied. Mr. Heaton's letter of 12th August last and Mr. Roberton's note which accompanies it tell us that important essentials of a full mining engineering course are still wanting.

### *Mining chemistry.*

Persons engaged in the mining trade have often complained of want of mining chemists. If the majority of the persons who go as such are not found suitable may not the result be due to defective instruction? Young men have gone to Japan and America for obtaining the requisite equipment of a good mining engineer and mining chemist.

### *Metallurgy.*

The Geological Survey say that there is not much demand for instruction in metallurgy. Mr. Heaton adressing the Director of Public Instruction, Bengal, on the 12th August last, stated. "There is a demand for courses in connection with metal mining. The Government of the Central Provinces have considered proposals for starting such classes, and I believe the Burma Government also." In Berar steps are being taken to have a school for metal manufactures as a memorial to the late King-Emperor and funds are being collected.

The Committee of 1901-1902 on industrial education strongly recommended the establishment of six institutes of experiment and instruction, one of which was for metal work (pages 11 and 33). The success of the aluminium industry in Madras amply justifies the recommendation.

### *Industrial chemistry.*

It is difficult to understand how it can be said that "the existing institutions in Calcutta can supply all the instruction for which there is demand." A mere look at the calendar of the Sibpur Engineering College will show that that institution makes no attempt to give instruction in the chemistry of any of the industries mentioned above and a visit to the College and a few questions there will place the matter beyond doubt. For want of provision in this country several young men have gone to Japan, America and Europe. Neither the Presidency and other Arts Colleges nor the Sibpur Engineering College can be expected to supply this deficiency. Entirely different kinds of courses and differing methods of instruction are required. The equipment itself will have to be of a different kind. So far as Bengal is concerned it can be said that except at Serampur in regard to the chemistry of textiles there is no provision in any public institution for real and effective training in any of the chemical industries mentioned above.

In Bombay, the Victoria Jubilee Technical Institute has a fairly good course in textile chemistry. More advanced courses and greater provision for more varied practice and experiments are wanted.

For the other industries like sugar, tanning and leather manufacture, oil and fat products, glass, lac, etc., there is no institution where any instruction is given. The sugar industry has gone down for want of scientific knowledge. The revival and expansion of that and other industries are of the utmost importance and every effort must be made for accomplishing this by the aid of the necessary knowledge and skill. If the Public Works Department had directed its mind to actual facts and approached the question from the standpoint of the development of the countries its opinion would in all likelihood have been different.

### *Railway engineering.*

The necessity of provision for the requisite training is pointed out by Mr. Heaton and more need not be said.

*Marine engineering, ship building and navigation.*

In view of the large sea-borne trade of the country the necessity for training courses in this is obvious.

R. N. MUDHOLKAR.

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## (3) Note for Educational Conference, Allahabad, 1911.

*Industrial education.*

The following information bearing upon the proposed resolution of Rao Bahadur R. N. Mudholkar has been collected. Information has likewise been called for from other sources, but is not yet to hand.

2. The *Geological Survey* have expressed the following opinions :—

(*i*) In mining engineering there is some demand for instruction which the department has tried to meet; but, as the course offered is in prospecting and mineralogy, it does not lead up to very satisfactory employment, and it would be more useful if reinforced by a study of mining engineering. Such instruction is available at the Civil Engineering College, Sibpur; but poverty prevents the students from taking this additional course.

(*ii*) In mining chemistry there is little demand for instruction, because openings appear to be few—though in reality this is probably not so. The students turned out from the Presidency College do not seem very well suited for such work. But a student from St. Xavier's College is instanced as having been employed by a firm and as now doing very well for himself.

(*iii*) In metallurgy there is not much demand for instruction. But there is some and is likely to be much more, chance of employment. The only two students known to have wished for such instruction went to Japan and England as there were no facilities in India.

(*iv*) In industrial chemistry there appears to be a poor demand, perhaps by reason of the inferior nature of the instruction offered by the commercial chemistry class at the Indian Association for the Cultivation of Science (Bow Bazar). There are also classes of technical chemistry at the Bengal Technical Institute. (These are private institutions in Calcutta; better instruction is probably available at Bangalore and in Bombay.)

Mr. Fermor thinks that probably the existing institutions in Calcutta can supply all the instruction for which there is demand. In especial, the Civil Engineering College, Sibpur, offers instruction in mining, technical chemistry, metallurgy and various branches of engineering. And St. Xavier's College offers a sound training in science.

3. *The Commerce and Industry Department* have no information of a demand for instruction in the subjects mentioned by Mr. Mudholkar which cannot be met by existing institutions. There has recently been considerable demand for Managers in the mining industry, and Government has tried to meet this demand by the special mining course at the Civil Engineering College, Sibpur, and by instruction at the principal mining centres. The average number of pupils at the Civil Engineering College, Sibpur, was 16 during the past three years; at the mining centres there was 607 students on the rolls, but the attendance (33 at each lecture) seems to have been lamentable.

4. *The Public Works Department* have remarked that the staffs at Government engineering colleges are deficient; but that the demand for highly qualified mechanical and electrical engineers is so negligible as not to justify the employment of an improved staff or the formation of an expensive committee of enquiry.

5. *The Chief Inspector of Mines* appears to consider that there is no great demand in Bengal for purely theoretical instruction in mining and mining chemistry and that what there is is fully met by the classes at Sibpur, though these classes are less successful than the lectures held in the coal-fields.

6. The following opinions have been collected in *Bengal* :—

(*i*) *Railways*.—Mr. Heaton thinks there is a real demand for Railway technology and suggests an outline of an institute, and as a practical beginning a short course of training in permanent-way work at the Sibpur, Behar and Dacca engineering institutions.

At present apprentices for permanent-way work are trained on the Bengal-Nagpur Railway. The method is crude and unsatisfactory, and the Chief Engineer (Mr. Sanders) recommends a special course at Sibpur.

(*ii*) *Marine engineering*.—No real demand, but Sibpur could adapt itself to supply any demand.

(*iii*) *Shipbuilding.*—Nothing very definite said. An evening course suggested in a half-hearted way.

(*iv*) *Navigation.*—Any real demands could readily be met. Apparently no demand.

(*v*) *Mining engineering.*—Good teaching and laboratory facilities at Sibpur. Little advantage, however, is taken of these. Government efforts have received indifferent support. The less ambitious classes at the coal-fields are doing very sound work.

(*vi*) *Mining chemistry.*—Coal analysis and sample arranging is done at Sibpur. There is some demand.

(*vii*) *Metallurgy, etc.*—Good instruction is available at Sibpur; but there is practically no demand.

(*viii*) *Metal work.*—Not taught at the School of Art. Silver embossing and chasing is one of the few art trades in Bengal.

(*ix*) *Industrial chemistry.*—The Superintendent of Industries, while admitting that there are great facilities in India, notes the disappointing results both of instruction as illustrated by the poor attendance at the class of the professor of tinctorial chemistry at Sibpur and also of actual industries as instanced by the apathy of Indian shellac manufacturers to modern methods and appliances.

The Professor of Industrial Chemistry, Sibpur, instances a number of Indian factories which now employ Indians who have received an industrial education. Apart from this the professor states certain developments and founds upon the fact that during the last four years hundreds of students have gone to foreign countries for studying applied chemistry—an argument for the urgent necessity of the establishment of a well-equipped technical college.

(*x*) *Mechanical and electrical engineering.*—The Superintendent of Industries says that the demand for such students has increased and that educational facilities have steadily improved. Improvement of existing facilities at Sibpur are under consideration, but the students are found to prefer civil engineering since it leads to Government employ.

The Officiating Professor of Electrical and Mechanical Engineering, Sibpur, says that there is demand for practical electricians, but not much for men of higher qualifications. There is more demand for mechanical engineers, and the facilities at Sibpur are under consideration while those at private or at railway workshops are very superior. He advocates in both branches of instruction a theoretical college course at Sibpur supplemented by practical training in the workshops of private firms of railways and of power-houses. It is added that in the past 13 years only 103 students have been trained in the electrical department at Sibpur.

The railway companies are making considerable efforts to train Indian apprentices in classes opened at Jamalpur and Lillooah.

(*xi*) *Textile manufactures.*—The Superintendent of Industries says that present methods and existing facilities already probably meet the serious demands for instruction. Government has done much; the results are disappointing, because students turned out cannot find satisfactory employment. Employers and those who have urged heavy expenditure on Government do not aid in putting the training gained at such institutions to a practical use. Until more practical application is made it would be useless to expend large sums of money on expensive schemes of education. At the same time he considers a good technical institute would be suitable in Calcutta.

The Principal of the Government Weaving Institute, Serampur, makes the same complaints and adds an account of the institute which provides for the annual admission (with ample scholarships) of 75 pupils annually to (1) classes destined to turn out teachers, managers and foremen of the weaving industries, (2) actual hand workers.

At the present moment the total numbers are only 71, which means that the institute is not half full. Furthermore, the men who have just passed out from the higher class and who are trying to induce the leaders and capitalists of Bengal to assist them in opening factories have hitherto met with nothing but disappointment. Until the present institution fills and until some practical support is given to the passed students it would seem useless to make further efforts.

7. *The United Provinces* have supplied the following information :—

(*i*) *Civil and railway engineering.*—Roorkee has classes of 20 a year; there is much larger demand for entry (about 60 a year). But there seems to be little demand for the class of men turned out, since those who are not employed by Government have difficulty in finding employment.

(*ii*) *Mechanical and electrical engineering and cotton.*—(*a*) Higher classes of 15 in each of these subjects could be opened at Roorkee; but there is no demand.

(*b*) Lower classes are held in electrical engineering, cotton and sugar.

Admissions:—

| | |
|---|---|
| 1906 | 34 |
| 1907 | 29 |
| 1908 | 24 |

These classes have now been abolished, but increased numbers could be accommodated.

(*iii*) *Agricultural chemistry* is provided for at the Agricultural College.

(*iv*) *Industrial chemistry* will be provided for at the Cawnpore Technical Institute.

8. The following information regarding the employment of State technical scholars will be of interest as illustrating the demand existing in India for men who have passed through a superior industrial course. Up to and including 1907-08, 27 scholars had been sent abroad. Full information does not appear to be available as to the subsequent career of all of them, but it is known that nine are employed, and that three of those employed are in Government service. It is also probable that one other is in employment at Leeds, and it is possible that others, regarding whom there is no information, have found employment.

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## (4) *Note on Textile Education in the Bombay Presidency asked for by the Director-General of Education in India, by the Hon'ble Mr. W. H. Sharp, Director of Public Instruction, Bombay.*

"The progress made in the Bombay Presidency in technical education applied to textiles, more particularly the highest point reached in such instruction, and the openings for young men who have received the highest training."

Up to 1888 there was no school in the Bombay Presidency where technical education was given on a scientific basis, and the only places where the art of spinning and weaving could be learnt were the mills and handloom factories. To meet this want the Victoria Jubilee Technical Institute was started in 1889. At first only elementary knowledge of spinning and weaving was imparted; but recent improvements enable students to acquire a fairly practical knowledge of both subjects, and after a little practice in mills they may be said to be thoroughly conversant with all details of the work. A similar Institute was opened about the same time at Sukkur (Sind), where only hand-weaving is taught. Amongst other schools of this nature the most important are:—

(1) Sir D. M. Petit Industrial School, Ahmednagar;
(2) Irish Presbyterian Mission Industrial School, Borsad;
(3) Ratnagiri Industrial School;
(4) Kala Bhawan, Baroda;
(5) Ranchhodlal Chhotalal Technical Institute, Ahmedabad.

The first of these is doing very useful work in hand-weaving, the boys being also taught the construction of hand-looms and other machinery. The second and third carry on hand-weaving on a smaller scale. The fourth turns out young men conversant with both hand and power looms, who after some practice in mills get employment on R25 to R50. The fifth is a newly opened institution, intended to work on the same lines as the Bombay Institute with the additional feature that the textile students are also taught carpentry, smithing, and fitting, to enable them to carry out their own repairs. The Superintendent of this new Institute informs me that the highest point reached in textile instruction in Bombay at present is the designing and weaving of dobby cloths with 40 staves, very little being heard of jacquard weaving. In spinning boys are well versed up to 40's but the turning out of higher counts can only be learnt in mills where all the necessary apparatus is always at hand. Weaving students can always start an independent business with a small capital; but the spinning industry being very limited cannot take up a large number of students from the various schools, partly owing to their insufficient experience, and partly owing to the competition of the apprentices trained at the mills. There is, however, always a fair demand for boys well trained in dyeing, bleaching, and finishing, subjects which are receiving increasing attention in cotton mills.

2. It will be seen from the above that the highest instruction at present available is to be found in the Victoria Jubilee Technical Institute, Bombay, which now possesses a complete outfit of machinery for instruction in spinning. Last year a spinning student gained a City and Guilds bronze medal in a competition open throughout the British Empire. The weaving branch includes winding, warping, sizing, bleaching, dyeing, and the weaving of simple and pattern cloths; instruction is also given in colour effects on woven cloth. All these processes are to be found in Indian factories; the instruction therefore stands in intimate relation to the industries of the country. On leaving the Institute the students are only fit for subordinate places, as is everywhere the case; but provided that they possess the other qualifications essential in a capable manager their prospects are excellent.

3. So far (as the Editor of the *Indian Textile Journal* informs me) one important branch of textile instruction has been overlooked, which is hand-printing on cloth. The success of this depends so much on cheap labour that the Indian workman once qualified ought to hold his own against the world, and might capture a large business with Africa that is now a Dutch monopoly.

4. The following remarks are extracted from a letter from Mr. W. T. Pomfret, the textile instructor at the Victoria Jubilee Technical Institute, who has also had the advantage of inspecting a number of weaving schools and classes in the Presidency on behalf of the Department.

"Every Lancashire industrial town or even village has a textile school, which the operative invariably attends at night, and works in the mills during the day. The result is a large number of Lancashire men occupy the most important position in the textile mills, while the Indians are obliged to remain in low-paid ones. Money prizes and scholarships are given to the most successful students so that they can remain in the textile school two or three years more. The Manufacturers' Associations have taken great interest in the working of the classes by taking on the students who have a natural aptitude for the work. In most of the towns the textile schools are equipped with up-to-date machinery for working the raw cotton into cloth. Bombay Presidency is in great need of similar advantages, so that the Indian operative may have the chance to gain an equal knowledge of the processes and of improvements which are ever taking place. We may divide the textile trade of India into two classes, (1) hand-loom, (2) power loom-weaving.

"(1) The hand-loom weavers make a variety of cloth from the coarsest to the finest silk and cotton cloths: in some districts rough blankets are made. The hand-loom weaver knows very little outside his own particular make of cloth. He knows very little of the improvements made in this and other countries. He still uses the primitive methods of manufacture. In the majority of the mofussil districts there is no way of him or his children gaining any knowledge of the improvements made. There is no training being given to the children of the weavers which would help to make them into practical thinkers instead of mechanical workers. To make progress we must have at such places as Dharwar, Belgaum, Hubli, Ranibennur, and Bijapur, and similarly in the cities of the Central and Northern Divisions, schools such as the Industrial Schools at Ratnagiri and Nadiad. In the Bijapur district there will not be less than 4,000 weavers, and yet there is no arrangement for imparting knowledge to the children of these weavers. Whereas at Ratnagiri there is such a school, but there is comparatively a small number of weavers. The progress made at such schools as the one at Ratnagiri is very good in practical hand-loom weaving, but there is very little work done in explaining the principles of textile work. This is a very important factor in the training of the students, as when they are thoroughly understood it leads on to improvements being made in the various processes, and the making of new designs. After a training of two years at such a school the most successful students should be given scholarships at the Victoria Jubilee Technical Institute. After leaving the mofussil industrial schools some of the students get positions as teachers in similar schools at R30 per month, others buy hand-looms and manufacture cloth, others go out to work as weavers for about R10. There is not a very great opening for these students. An Industrial textile school should not cost more than R1,000 for equipment and R80 per mensem for maintenance.

"(2) The textile department of the Victoria Jubilee Institute became a necessity when the City of Bombay and afterwards the Presidency undertook the production of yarns and cloth by machinery. The training given has invariably gone beyond the requirements of the mill, which for many years was confined to the production of coarse yarns and cloths, ranging from 4's to 30's. The aim has been to improve very largely upon the apprentice system of learning the operations in the mill, and this has been done by practical instruction and theoretical training. The spinning plant is complete with machinery for making any kind of Indian yarn, and the weaving workshop will soon be equal to many of the institutes in Lancashire. The course of instruction includes every process through which cotton is passed in the mill. The students dismantle the working parts of all the machines, then fix and adjust the working parts in relation to each other. The professors take them to the mills of Bombay as a supplement to the instruction received at the Institute. The result is a product capable of taking up the work of a spinner or weaver in a mill and performing it with intelligence and economy, capable also of supervising and improving the work of untrained workers. At the City and Guilds Examination in 1909 nearly 90 per cent. of students passed, in 1910 82 per cent. Comparing these results with those of England, they are approximately 30 per cent. higher. There is very little difficulty in a hard-working and intelligent student getting a position in a mill on completing the courses. I am trying to get the Bombay Millowners Association to forward on to me information about any vacancy there may be in the mills of Bombay. Below is given a brief summary of the positions of past students:

| Number. | Position. | Salary. R |
|---|---|---|
| 9 | Managers | 200 to 500 |
| 20 | Weaving masters | 150 to 400 |
| 1 | Principal | 500 |
| 15 | Spinning masters | 75 to 300 |
| 10 | Yarn agents | ...... |

"The textile department of our Institute may be made more useful to India by the students taking their scholarships here instead of going to England. The course of work passed through in England is simply a repetition of what has been given here. If the result of the City and Guilds Examination be taken as a standard of efficiency we are 30 per cent. higher. Instead of giving a student £150 a year that could be divided into a number of parts, and if we add the necessary travelling expenses of going to England at least five students could be given a further training instead of one. There would be no difficulty in getting such students to work occasionally in the mills of Bombay. By the combination of the working in the mills and at the Institute it would result in our students being placed on an equality of experience with the Lancashire students, as the latter attend the classes at night and the mills during the day. This arrangement would be to the advantage of India and the students, for the students working in the midst of difficulties, that is in the actual workshop, invariably learn more and do it better than those for whom everything is made smooth."

W. H. SHARP,
*Director of Public Instruction, Bombay.*

POONA:
*The 20th September 1910.*

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### (5) *Note on the progress and future prospects of the Weaving Institute at Serampore with its outlying centres, by Dr. A. du Pre Denning, Superintendent of Industries and Inspector of Technical and Industrial Institutions in Bengal.*

It may be remembered that in 1903 the Government of India forwarded to Provincial Governments the Report of the Committee, which had assembled in 1901-02 to consider the subject of industrial education and at the same time called for the proposals of the Provincial Governments as to the industry or industries with which experiments should be commenced in order that the development of such industries might be fostered by educational means as far as practicable. In June 1904 the Bengal Government forwarded to the Government of India a scheme for the establishment of—

(*a*) a Central Weaving Institute, to be located at Serampore, for the purpose of imparting instruction as to the best methods of hand weaving in cotton, silk and wool, and

(*b*) five selected outlying weaving schools under the general superintendence of the officer in charge of the Central Institute.

The estimated annual recurring cost of these proposals was rather more than R35,000 and the non-recurring over one lakh. The scheme received the approval of the Secretary of State in 1907. The appointments of the Principal and the Assistant Principal were not however, filled until the end of 1908 owing to the difficulty of finding suitable men. Consequently the classes at Serampore were only started at the beginning of last year.

2. The reasons, which influenced the Bengal Government in their decision to attempt to render assistance to the Weaving Industry will, I imagine, be readily appreciated.

The revival of the handloom Weaving Industry of India, and the amelioration of the lot of the poorer weavers had, of recent years, been the subject of much consideration and discussion. Weaving is an industry next in importance in India to agriculture and estimated to concern the welfare of almost 4 per cent. of the population. In Bengal alone, according to the Census of 1901, there were 1,800,000 people supported by the various textile industries and 902,000 people supported by cotton handloom weaving: approximately 300,000 of these latter were male workers. It was known that many were finding it exceedingly difficult to make a living by their trade and were gradually giving up weaving for other occupations. For example, more than 12 per cent. of the Tanti and Tatwa castes, two important weaver castes in Bengal, were found to be engaged on earthen work and general labouring and only 52 per cent. in textile and dress industries. Consequently the Government of Bengal, after much consideration of schemes connected with other industries, such as aluminium, brass, etc., decided to tackle the question of trying to teach the Bengal weavers (i) the use of modern fly-shuttle looms, an instrument so vastly more effective than the primitive looms still widely used by the weavers, and (ii) improved methods of weaving, of preparing warps and wefts, etc., so that every facility might be afforded the weavers to increase their output and to face the keener competition of the present day.

With regard to the introduction of the fly-shuttle looms it has to be remembered that it is easy to exaggerate the effect of an improved loom and to imagine that the mere doubling of the rate of production of the handloom will by itself bring about a very material improvement in the weaver's condition. Weaving itself is, of course, only one part of the several processes through which cotton is made to pass in the hands of the weaver in its conversion from yarn into cloth, and consequently an improvement in this one stage may have only a small beneficial effect on the weavers' position, if the other processes are allowed to remain crude and antiquated. Between the primitive methods of warping and sizing, for instance, usually employed by the native weavers and the better arranged modern methods of the west there is a great

difference both as to the rate of production and the cost of working. Consequently attention is also being carefully directed towards improvements on the weaver's present methods: a simple device has been made which enables a weaver to arrange 50 to 100 warps threads at one operation instead of one or two only as now is usually done. Further, it is thought that the methods usually adopted by weavers in disposing of their goods may ultimately be improved by the adoption of some sort of co-operative agency. This last question is, however, one for the future and has not yet been considered.

4. At the Government Weaving Institute, Serampore, two different grades of students are received:—

(*a*) Young men of a fair degree of education who may be trained as future teachers, managers and organisers of the weaving industry. These form the higher or A classes.

(*b*) Actual handloom weavers from Serampore and other places. These form the lower or B classes.

The staff of the institute consists of a European Principal (from Manchester School of Technology), and Assistant Principal, a drawing master, a jobber and four practical weavers appointed temporarily as demonstrators and also a clerk and duftri. The Institute has, moreover, been equipped with many different types of looms having improved devices and has a modern European equipment for sizing, warping, etc., as well as a small outfit for dyeing.

The progress made since the commencement of the Institute in January 1909 has been very satisfactory and no difficulty is now experienced in getting the full complement of students for both the A and B classes, that is to say, approximately 50 in each section in the present buildings, 10 places being reserved for Eastern Bengal and Assam if required. This year, the Eastern Bengal and Assam Government has sent three students to undergo a course of study of the higher classes. Of these two are regular students, and one has taken up a special course in weaving and dyeing, as he has been nominated for a State Technical Scholarship to enable him to complete his studies in England.

When the classes were first opened there were 30 students in the higher section and one actual weaver only in the artisan class. During the course of the next two months the numbers gradually swelled to 75, of these 70 belonged to the higher class and five to the artisan class. The first sessional examination was used as the means of weeding the higher class of idlers. With the commencement of the new term of this year, twenty-two boys, who had passed the sessional examinations were promoted to the 2nd year's course of the higher class and twenty-seven new students were admitted to the 1st year's course, thus making a total of 49 in the higher classes. The number of students in the artisan class is constantly fluctuating since the course of instruction in this class is much shorter and all who enter do not stay the full time. In June last there were 45 artisan students in attendance.

There are at present 32 students in the hostel, of whom 22 are Hindus, four Muhammadans and six Christians. A separate building has been taken for the accommodation of the Hindu students on a monthly rent of R28 per mensem and the Muhammadan and Christian students are living in the school building.

5. A course of practical instruction exceeding over a few months is given to the artisan class, through the medium of the vernacular, in practical weaving, fabric structure, design and analysis of cloth, drawing and the dyeing of yarn. It is not possible to hold any written examination for this section as most of the attendants are illiterate. At the commencement of the institute much difficulty was experienced in getting actual weavers to join, as, apart from natural prejudices against a new scheme, they were under the impression that they could learn nothing more than what they already knew. I am pleased to be able to state that in a little while they changed their minds and were full of wonder when they saw how easily their cherished trade secrets could be analysed and worked out after a little instruction, even by youngsters. Their unwillingness to join has now been overcome, and at present there is no trouble in getting *boná fide* weavers to fill the places of those who pass out. Another attraction is the simple course of dyeing that they are taught. Up to the present time they had to buy dyed yarns at high prices, and the weavers tell me that the knowledge of dyeing they get is quite sufficient for them to earn a livelihood apart from weaving.

Prior to the establishment of the Weaving Institute, Serampore weavers limited themselves to the manufacture of dhootis with coloured borders, and with few exceptions these borders, which were very limited in number, were considered family secrets and handed down from father to son; now the weavers are able to produce design paper, designs requiring up to about 10 or 12 shafts. The simple preparatory drawing lessons they get are found to be of great assistance to them in producing new and original designs. One drawback, however, these classes experience is their recognition among the mill-owners of the district as effective recruiting grounds for intelligent weavers, and consequently the artisan students are frequently tempted away before they have fully finished their course.

5. For the higher classes the course of studies consists of lectures and practical lessons in the first year in the following subjects:—

(*a*) Practical dyeing.
(*b*) Sketching of textile machinery.
(*c*) Model drawing.

(*d*) Freehand drawing.
(*e*) Design and analysis of cloth.
(*f*) Preparation of yarn.
(*g*) Textile fibres.
(*h*) Fabric structure.

and in the second year in the following subjects.—

(*a*) Practical weaving.
(*b*) Construction of works.
(*c*) Engineering drawing.
(*d*) Textile chemistry.
(*e*) Design and analysis of cloth.
(*f*) Fabric structure.
(*g*) Weaving mechanism.

This year the first batch of students sat for the City and Guilds Examinations in Weaving and in Cotton Spinning; eight passed very creditably in the former subject and six in the latter.

6. *Scholarships.*—Forty Government scholarships of R15 each are open to students of the higher classes to enable them to maintain themselves while undergoing their course of study at the institute. These scholarships are awarded every term to the first 20 boys of each class who pass their examinations and satisfy the Principal in their term's work. A keen competition among the boys in the classes is thus maintained.

Twenty Government scholarships of R6 each per mensem and twenty scholarships of R4 each per mensem tenable for four months to one year have been provided for the artizan class. These scholarships do not fully suffice for the maintenance of the weavers and their families, and consequently the District Boards and Municipalities have been asked to supplement their nominee's scholarships so as to bring them up at least R10 a month, the estimated cost of maintenance of a weaver at Serampore. The majority of the District Boards have responded, and in some cases have also offered appointments to their nominees after the prescribed course of training has been completed.

7. The scheme further provides for five outlying weaving schools at which a less comprehensive course of instruction is to be given in the vernacular to men of the weaver class. For each of these schools 20 scholarships of R4 per mensem have been provided as subsistence allowances for the weavers during the period they are undergoing a course of instruction. So far only one of these centres has been opened. This is in Bihar and under a teacher trained at Serampore. The opening of the other centres is under consideration.

A weaving school was also opened last year at Sambalpur, under a teacher trained at Serampore, to teach the Gondas (weavers by caste and the chief criminal tribe of the district) the use of the fly-shuttle loom in order to afford them a better opportunity of earning an honest livelihood. This school has proved very successful and His Honour Sir E. N. Baker, who recently visited it, has approved of proposals for increasing its accommodation and equipment.

8. One part of the original proposals was "that care should be taken that when students leave the schools they are provided with advances for the purpose of purchasing appliances such as will enable them to put their acquired knowledge to account." It was thought useless to educate weaving students in the manner proposed, if, after the completion of their training, they were to be sent back to their homes without the means of purchasing the improved appliances required. It was not considered necessary at that time to make any estimates for this purpose since it was contemplated that such assistance would be provided through the agency of the urban societies and the Co-operative Credit Societies Act of 1904. However, I am afraid these societies are not likely to be in a position to assist materially for some time to come and then possibly only at a few scattered centres. This question of advances is one under consideration in the Director of Public Instruction's office at the present time.

9. I have briefly sketched the reasons for the Bengal Government having entered upon this scheme and the way we are endeavouring to carry it out. In conclusion I would give a few figures relating to the Indian hand loom weaving industry prepared for me by the Officer-in-charge of the Government Weaving Institute.

The production of hand-looms working in India, is estimated at 165 crore yards. The ordinary native-looms work at an average effective speed of 20 picks per minute. If this be increased to 30 picks, as may readily be effected by approved fly-shuttle devices, the increased production of the same number of looms would be 247½ crore yards, which more than equals the total cloth imports of the country. As this increase could be produced by the same number of men as are now engaged on the looms the price per yard would naturally be lower than at present and the weaver's ability to withstand the foreign competition would correspondingly, increase. Moreover it is not to be forgotten that the hand-loom is still extensively used in Europe and indeed in the United Kingdom. There are certain classes of goods which power machinery cannot readily or economically turn out. Consequently under skilled guidance we may hope for much greater vitality in the Indian Weaving Industry on account of the cheapness of native labour.

Again, the following table gives an approximate estimate in millions of yards of the various kinds of cloth consumed in this country with their sources of production.

*Table.*

| No. | Class. | Warp Counts. | Weft Counts. | Indian Handloom supply Million yards | Indian Mill supply Million yards. | Foreign Importers Million yards. | Total Consumption Million yards. | Percentage. |
|---|---|---|---|---|---|---|---|---|
| | | s. s. | s. s. | | | | | |
| 1 | Coarse . . . | 6 to 16 | 6 to 20 | 900 | 60 | 300 | 1,260 | 26 |
| 2 | Coarse medium . . | 20 to 26 | 20 to 40 | 150 | 500 | 1,100 | 1,750 | 37 |
| 3 | Medium . . . | 26 to 40 | 30 to 50 | 450 | 40 | 750 | 1,250 | 26 |
| 4 | Fine . . . . | over 40 | over 40 | 150 | ... | 350 | 500 | 11 |

From the above table it will be noticed that there are certain kinds of cloths, such as those woven from 6*s* to 16*s* yarns and from 26*s* to 40*s* and over, that power loom in India hardly touch, their principal line being in the weaving of cloths from 20*s* to 30*s* yarns. The reason attributed for this is that coarser cloths are woven from inferior yarns which will not stand the vibration caused by the high speeds of the power looms. Regarding the finer counts, Indian cottons will not allow of finer yarns being spun than say 40*s*. As the majority of the mills have been equipped for the spinning and weaving of Indian cotton, it would not be profitable to the Proprietors of Mills to import finer yarns from England and America. It is here that the Handloom Weaver scores, and except for foreign competition has the field to himself. In Bengal as we have seen there are about 300,000 male hand-loom weavers; if the earnings of each weaver could be increased on the average by R2 a month, a low estimate of what might be obtained by the universal use of fly-shuttle looms and the adoption of other improved processes, there would be an increased gain to the Province of R72,00,000 a year. Accordingly there would appear to be every justification for our expectations and belief that there is a future of much usefulness before the Government Weaving Institute and its subsidiary centres.

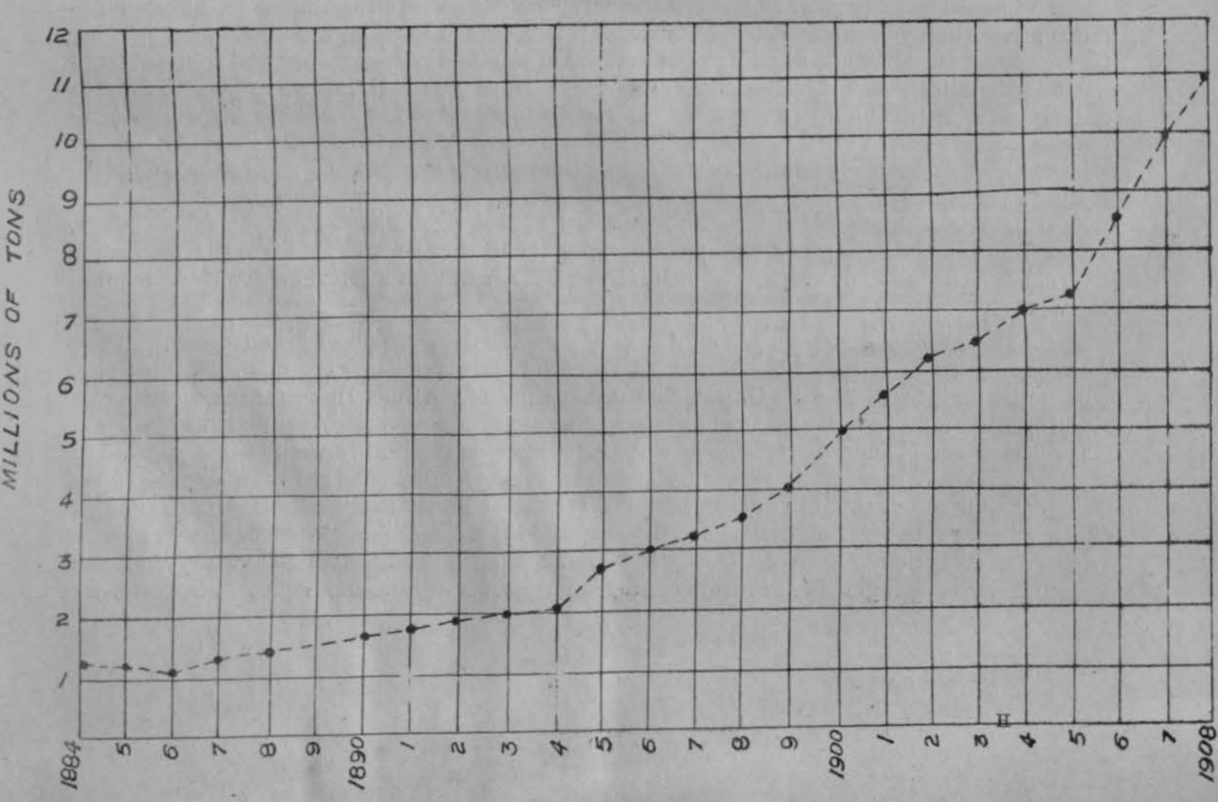
A. DU PRÉ DENNING,

*Superintendent of Industries and Inspector of Technical and Industrial Institutions in Bengal.*

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### *(6) Note on Mining Instruction in Bengal, by Dr. du Pré Denning.*

Prior to the year 1904, no provision whatsoever had been made with reference to Mining Education in India although striking developments had taken place in the working of the mineral resources of the country, notably coal, gold, and petroleum. Especially had this been the case with the chief mineral products of Bengal, namely, coal. It will be well first to deal briefly with the growth of the Bengal Coal mining industry in order to realise the reason for Bengal having taken such particular interest in Mining Education. The appended diagram, showing the large increase of coal output that has taken place since the year 1884, probably illustrates this growth much more concisely and convincingly than mere words.



The average number of persons employed in or about the mines has increased in a similar manner Until the year 1909 there were 112,219 persons engaged in getting coal. Until recent years the major portion of the output was derived from shallow depths, but now, and especially in the case of the better class of coal seams, mining is carried on at much greater depths. In years past the coal was chiefly won from the outcrops by means of inclines, but now shafts are in the process of being sunk which are intended to win coal at a depth of a thousand feet. Hence the difficulties to be met with and the consequent dangers to the workmen in carrying out their operations are largely increased.

2. In the year 1901 the Indian Mines Act was enacted. Under its provisions it became necessary that managers of mines should possess certain qualifications and that these persons acting under them should be better trained. In order to meet the situation created by the enforcement of this Act certain proposals were originated by the Government of India, Department of Mines, and a sub-committee was appointed to consider and prepare a scheme to yrovide for instruction in mining at various centres in Bengal. On the 13th of April, 1904, their report was issued and afterwards sent in to Government. The scheme outlined by the sub-committee included proposals for (*a*) the organising of special courses of instruction in the mining districts under a peripatetic Mining Instructor and for (*b*) the establishing of the mining classes at the Sibpur Engineering College under a Professor of Mining.

3. Turning now to the outcome of the first of these proposals. Mr. W. T. Griffith was appointed Mining Instructor towards the end of the year 1905 and in February, 1906, an Advisory Board to arrange for all matters concerned with the courses of instruction in mining in the coal-fields of Bengal was created. The Board consisted of the following members:—

1. The Principal of the Civil Engineering College, Sibpur.
2. The Chief Inspector of Mines in India.
3. An Inspector of Mines.
4. One representative of the Indian Mining Association.
5. The Mining Instructor in Bengal (Secretary).

4. Four centres of instruction were eventually chosen, two in the Raniganj coal-field and two in the Jerria coal-field. It was suggested that the Mining Instructor, working with a staff consisting of one Indian Assistant and a peon, should deliver one lecture per week at each centre, thus involving a weekly tour in a circuit of about 125 miles. The session lasted from the beginning of November to the breaking of the rains in the following month of June. Local Sub-committees were appointed at each centre to assist in carrying out the scheme. There being no suitable accommodation available lecture rooms at each centre were erected : but previous to their erection, the work was carried on in colliery offices, colliery locomotive sheds, or rooms in the local club houses. As illustrative of the desire shown in the coal-fields for some scheme of instruction it may be stated that the verandahs of private dwellings were freely offered for use.

5. Instruction was carried on in accordance with a prearranged syllabus ; and at the end of each session examinations were held and certificates awarded to successful candidates. The scheme of instruction further provided a means of training for prospective candidates for the examinations of the Board of Examiners created in 1906 under Rule 28 of the Indian Mines Act (1901) (Rule 25 relates to Managers).

6. Since the initiation of the Instructional scheme in January 1906, down to July of this year, 449 lectures have been delivered with an average attendance of 27 per lecture. 69 students have been granted certificates by the Advisory Board, whilst 94 students who have attended the course of lectures have been granted certificates of competency as managers of collieries under the Indian Mines Act.

7. For the past five years the scheme has only been in an experimental stage, but its introduction has already benefited a large number of persons both as to their knowledge, and in their future prospects. Owing to growing complications of mining legal enactment and to the development of the colliery industry the future is generally expected to bring forth a demand for men still more highly trained than at present. As further indication of the necessity for the continuance and improvement of the scheme it has been pointed out that since the inception of the scheme eight different electric power plants have been erected at various mines for pumping, hauling, coal cutting or other purposes. In addition to the usual increases in plant due to deeper workings there have been introductions of coke ovens and of compressed air plants, water filters and other engineering appliances in order to cheapen and facilitate the production of coal. And these developments naturally call for men with a certain amount of technical knowledge.

8. The Mining Instructor having this year completed the period of his agreement, it has become necessary for us to make further provision for the continuances of this special technical instruction in the coal fields. On the recommendations of the Chief Inspector of Mines and the Mining Advisory Board, Government has been asked to sanction for a further period of two years the appointment of four selected mines officials to carry on the lecture work at the same four centres and to place their classes under the supervision of an enlarged Advisory Board and under the inspection of the Bengal Inspector of Technical Education, the Professor of Mining at Sibpur College and the Chief Inspector of Mines and his staff. It is anticipated, though I cannot yet say how far these anticipations may be realised, that in this interval of two years, some scheme may be brought forward and considered for correlating and developing these courses of

Mining Instruction with other branches of Technical Education in the same districts. It is possible for instance that the new scheme may take the form of proposals for the opening of one or even two technical institutes situated in such populous industrial centres as Asansol in the Raniganj field and Dhanbaid in the Jherria field. Were this done some provision might then be made for the conduct of special classes for Railway officials and for short commercial courses for both Railway and Mining clerks.

9. However all this is at present purely speculative, so I will turn now to the outcome of the other proposal of the 1904 Sub-Committee namely, the establishment of Mining classes at the Engineering College, Sibpur, under a Professor of Mining. In 1905 Professor E. H. Roberton, for three years a lecturer in Mining in the University of Birmingham, joined his appointment and in consultation with Mr. Heaton, the Principal of the Engineering College, who had just returned from a tour of the principal Technical and Mining Colleges of America, drew up the scheme of study now followed in these classes. It is contended that the scheme is an adaptation to Indian requirements of the best courses to be found both in Europe and America. The full course is at present a four-year one, preparing for the Advisory Board's Diploma Examination. It is also contemplated that before very long students may be prepared for the proposed examinations to be held by the University of Calcutta for the degree of B. E. in Mining. Subsequently to their fourth year of study some students spend a fifth year in the Electrical Department of the College taking out a course including responsible work in the power and dynamo-houses. This electrical course is said to prove particularly valuable to mining students owing to the increasing use of electricity in the colliery districts.

10. An up-to-date Mining Engineer now-a-days requires a varied and all-round education in the allied sciences: he should not only have a practical and theoretical knowledge of Mining, Geology and Mineralogy, but should also possess a good general idea of the leading principles of such sciences as Mathematics, Physics, Chemistry, Mechanical, Civil and Electrical Engineering and sometimes of Metallurgy.

It is the object of the Sibpur classes to provide for the training of such Engineers. A perusal of the rules of the Engineering College or better still of the transactions of the Mining and Geological Institute of India, Volume IV, pages 45-70, will show the courses by which it is intended to give the requisite knowledge. In addition to their lecture and laboratory work, the students enjoy the advantage of cold-weather camps in a colliery district for practical training in Mining and Surveying observations.

11. The Mining Department of the College has a small but very comprehensive set of models and teaching apparatus. This includes models of Coal Seam workings, ventilating fans, timberings, stamp battery, safety detaching devices and hooks, etc., also an excellent model of one of the Giridih shafts with pumps, head gear, hauling gear, engines and boilers, a set of miners' tools, apparatus for coal analysis, set of safety lamps, and of various types of fuses, wall diagrams and an excellent set of lantern slides. When the College is removed to Ranchi it is intended to use these and the small laboratory plant now temporarily housed in a small shed as the initial equipment of a special Mining laboratory, where equipment and research work on Bengal coals and minerals can be carried out. The present laboratory stamp includes a gyratory crusher, a disintegrator with coal dust collector, a Hartz jig, a Blackett coal washer, small air compressor, percussive rock-drill, a set of boring drills. It is desired at an early date to erect a gallery for testing safety lamps, some experimental coke ovens, an experimental briquette making machine and other special plants.

12. I have dwelt at some length on the equipment to show the extent to which the Mining Department has been developed and to show that Indian students can secure in their own land in the Sibpur College practically as good instruction in Mining as they will get in the Mining Courses of American or English Colleges. There is in my opinion and that of many others little or nothing to be gained by sending Indian students abroad for such purposes. It will be noticed that I am not saying anything as to the undoubted value of practical mining experience in an actual English or American Mine. Unfortunately this kind of training does not appeal to the Indian mind.

13. Turning next to the students, who have hitherto attended the Sibpur classes. Their strength in numbers had hitherto not been very great: in 1906-07 there were 10, in 1909-10 there were 18 and this year there are 16 students. However, it has to be remembered that the growth of such an institution as a College mining department in a country where such departments of learning are very little known, is by its very nature bound to be a slow process. Such is indeed even now-a-days not infrequently the experience of more advanced Western countries. Though the Mining Department at Sibpur College is only still in its infancy, it is already proud of its record. Two of its passed students have already attained the position of mine managers, two have gained their first class managers' certificate and seven their second class managers' certificate, one is an Assistant Lecturer in Mining in an English University, the majority of the others are in responsible positions. The classes, it need hardly be remarked, received a temporary set-back by the collapse of the recent coal boom, since parents naturally hesitated to send their sons to be trained in a Mining course lasting over four years.

14. It is probable that it may on first thoughts appear likely that, if our lecture courses in the coal-fields were properly conducted they would meet the demands of the Mining Industry and there would be no real need for the classes at the Engineering College. With such a view I am not inclined to agree. One lecture per week is not going to make really downright efficient mine managers. Such lectures will of course considerably assist an energetic

practical man, compelled to get a certificate before he can ever hope to gain any position of responsibility, and they will improve the general knowledge of mining officials: as the best, however, only the main heads of the appropriate subjects can be lightly touched upon in such lectures. These courses they will ultimately assist, I imagine, to train young men destined to occupy the more responsible subordinate positions in the mining districts, while any smart youngster who goes through the Sibpur College course, should be able to secure a more responsible position, after he has had some years of actual mining experience and steadily applied himself to his work. Unfortunately some expect these positions directly they leave Sibpur. A Sibpur lad's theoretical mining and general scientific knowledge, his reading and workshop experience should give his thoughts a greater breadth of view and in the future should give him a more solid confidence in his own opinions.

To properly establish such a state of affairs will of course take time: the previous traditions of Indian mine managers and mine owners and the ambitions of parents will probably make it a matter of years before it is fully realised that a general foundational course such as Sibpur provides is indeed, when combined with several years of actual mining experience, the most efficient course of training for the younger generations of mine officials.

Briefly summarised, then, the Bengal Education Department at present endeavours to meet the demand for technical education among mining officials by—

(*a*) Courses of local lectures—principally for the training of the subordinate officials.

(*b*) A college course—primarily for the training of more highly qualified mining engineers.

The annual expenditure upon each scheme has been approximately R16,000 per year. The staff in each case has consisted of a fully qualified European assisted by an Indian assistant and a small menial staff.

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### *(7) Note on the Indian Institute of Science and on the organisation of Scientific and Technological Institutions, by Dr. Morris W. Travers, Director.*

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In a Report presented by the Director to the Council of the Institute in July last there is a clear outline of a policy and a scheme for the organisation of the Institute which do not accord with the above statements. On page 49 of the Report it is clearly stated that the object in view is to create "a complete faculty of pure and applied science" (in other words a technological Institute). It is pointed out, however, that the annual cost of maintaining such a faculty would be some thirteen lakhs, and that it would have to include the following Departments:—

(1) Mathematics.

(2) Physics.

(3) Astronomy.

(4) Engineering (mechanical, civil and electrical).

(5) Chemistry (inorganic, physical, organic, manufacturing, analytical, agricultural, physiological).

(6) Botany (systematic, physiological, economic).

(7) Zoology (general, parasitological, entomological, etc.).

(8) Physiology.

(9) Bacteriology (pathological, economic).

(10) Psychology.

(11) Sociology.

(12) Economics.

(13) Metallurgy.

(14) Textile manufacture, dyeing, colour printing.

(15) Tanning and leather manufacture.

(16) Agriculture.

It is obvious that the available income of the institute, which amounts to about R2,70,000 per annum, is but sufficient to establish the mere skeleton of such a faculty, but though they fully realise that the goal may be very far ahead of them, the Council have determined to make such a beginning as they believe will pave the way to ultimate success. Their policy is based on the interpretation of the history of the development of scientific and technological education in other countries. In this matter they have been pleased to accept my views, and though many of you will doubtless disagree with me, I will ask your permission to lay them before you.

There are four main lessons to be learned from the study of the development of scientific and technological education in Europe and America. They may be stated briefly as follows :—

(1) Science and technology are inseparable, and scientific departments, fully equipped and properly staffed, are indispensable constituents of every technological institution.

(2) Isolated special schools can effect little or nothing towards the improvement of industries.

(3) It is often preferable to establish a specialised department in connection with a large institution rather than in close touch with the industrial centre with which it is concerned and in isolation from other scientific departments.

(4) Scientific and technological research cannot be efficient unless the workers have ready access to adequate libraries.

It will be understood that I refer to institutions providing facilities for advanced training and research, and not to trade schools, or to institutions providing instruction in subsidiary subjects relating to trades, for foremen and other subordinates. The organisation of these schools involves the consideration of an entirely different set of problems, which I do not purpose to touch upon in the present paper. Though in our workshops and laboratories we shall probably be able to train a few apprentices, it is not the object of the institute to do so, and no special provision has been made for the purpose.

Anyone who has studied the organisation of any of the modern British Universities, of the Imperial College of Science and Technology, the American Universities, of the French Universities or of the great Technical High Schools of Germany or Switzerland will observe how completely the lessons which I have referred to have been learned. In each of these institutions it is found that, even when the object in view is the promotion of the application of science to industry, rather than the study of science for its own sake, the departments of applied science centre round the departments of pure science. Indeed, it is often the case that though the main departments of applied science are of independent growth, the minor departments are developed from those devoted to pure science. Amongst the many reasons for this state of things there is one which is of fundamental importance. The efficient solution of technical problems involves not only an intimate knowledge of the latest scientific developments, but often calls for investigations which are of a purely scientific character. The technological expert's duty is to keep in touch with industrial developments, and to carry out only such experiments as may lead to the application of scientific principles to practical purposes. His time is usually so fully occupied that he cannot possibly be as close abreast with the progress of pure science as can his colleague who is merely interested in its applications. Further, he has no time to attend to the purely scientific investigations on which his work often rests. However, when departments of pure and applied science are associated the technologist is able to obtain such advice and assistance from his colleagues as he may require, often calling upon several departments to assist in the solution of a single problem. To those engaged in pure science association with the departments devoted to technology brings a variety of problems, which are not only of interest but form useful material for the training of students.

In one of his writings some little time after the passing of the Law of 1896, which reorganised higher education in France, and reconstituted the Provincial Universities, M. Liard, Rector of the University of Paris, and one of the greatest authorities on higher education, set down the unsatisfactory condition of scientific and techonogical education in France previous to the passing of that law, to the fact that the system isolated department from department. The object of the law was to create out of the "special schools," which had existed side by side in the same town, universities, homogeneous institutions consisting of interdependent units. The policy under which the modern Universities have been established is of a similar character to the Law of 1896. It has resulted in uniting such institutions as were suitable for the purpose in each of the most important cities into a university but after the experimental formation of a combined University for Manchester, Liverpool and Leeds, which was not a complete success, it was acknowledged that the departments which constitute such an organisation must be situated close to one another if they are to derive any benefit from association. Those who have followed the development of university education in Great Britain during the past ten years, will realise the vast improvement which the adoption of this policy has brought about.

So far I have only called attention to the inefficiency which is known to result even from the isolation of departments in a large European town. I have no parallel to offer to the suggestion that a specialist should be established in a laboratory in an Indian town and expected to improve the local industry. Were he so placed, cut off from association with colleagues in allied branches of science and technology, I do not think that he would do much to solve the new problems with which he would be certain to be brought face to face. I will return to this question later.

We now come to the third point, which I have raised. A glance at the prospectus either of the Imperial College of Science and Technology, or of the Technical High School at Charlottenburg will show that many subjects, not connected with local industries are provided for and dealt with efficiently. The reason for this I have already given while dealing with the first

"lesson." Many scientific and technical problems can only be solved by the co-operation of experts in different branches of science with the specialists to whose departments the problems may appear to belong; and though it may be inconvenient for the expert to travel frequently to the seat of the industry with which he is concerned, it is preferable that he should have to do so, than that he should be kept out of touch with colleagues, of whose advice and assistance he may often require to avail himself.

Lastly I turn to the question of libraries. Unless an investigator has ready access to all the available literature of the subject upon which he is working, a large proportion of his time must be wasted in useless repetition of other men's work. This fact has been clearly recognised by some of the most scientific departments of the Government of India, and wherever you find a large output of scientific work, you may be certain that there is a library at headquarters. On the other hand one cannot help associating the lamentable position of science in India as a whole with the lack of libraries.

It is the imperative need of every scientific worker to have access to a library containing journals and works of reference, relating to his own and to allied subjects. Such a library cannot possibly be established in connection with an isolated department, and this forms one additional argument for the concentration of such departments and the formation of large institutions.

To return to the Indian Institute of Science. We are attempting to follow a policy which has been laid down in accordance with the teaching of history. We believe that in this lies the surest road to success. For though India may differ in almost every respect from the West, there is no reason to suppose that success may be attained in India by methods which have only led to failure in other countries. This policy involves the formation of departments of pure and applied science, which will at once cater for the needs of students, and will be able to co-operate in the solution of Indian problems, and also of a library containing all important journals and works of reference relating to those subjects. The selection of the subjects has not been an easy matter, for the income of the Institute is sufficient to maintain not more than six departments, and the list of departments which would constitute a complete faculty of pure and applied science is, as I have shown, a long one.

When the session commences in July of this year four departments will open, namely, those of general chemistry, organic chemistry, applied chemistry, and electrotechnics. We have these subjects selected for the following reasons. No subject has a more important bearing on industry than chemistry, and so comprehensive has the term chemistry become that no first class scientific and technological institution could attempt to deal with it in a single department. Pure chemistry using the term pure in a very popular sense may be dealt with under the first two headings, and in the departments of general and organic chemistry the scientific aspect of the problems with which we shall have to deal will be treated, and students will be trained with a view to their entering upon careers either in pure science, or to their entering the department of applied chemistry. Students of the best class will probably follow a course of study and research in one of these departments before entering upon a course in the department of applied chemistry. The latter department will be devoted entirely to practical teaching and research on the applications of chemistry and engineering to industry. The equipment of the department is such as will enable students to carry out experiments on a factory scale, and in Professor Rudolf, who has designed the laboratories, students will find a leader possessing a wide experience of chemical manufacturing processes, and an intimate knowledge of Indian industries. It was essential that the nucleus of a department of engineering should be established, and in view of the possible developments of electrical enterprises in India, electrical engineering was fixed upon as the particular branch to be dealt with in the first instance. The laboratories, which have been designed by Professor Alfred Hay, formerly Professor of electrical engineering at Cooper's Hill, and well known for his writings on his own subject, will be as well equipped as those in any institution in Great Britain. For the library the sum of R75,000 for capital expenditure, and R7,500 for annual expenditure, exclusive of the librarian's salary has been set aside and about R32,000 has already been expended on the purchase of journals. Of this department I need say no more.

We must now consider the allocation of the two remaining departments for which the income of the Institute appears to be sufficient. The matter is now under consideration by the Council, but without prejudice to any decision which they may ultimately arrive at, I will give you my own opinion.

Micro-organisms play an important part in many industrial processes, and the solution of the problems connected with such processes can only be arrived at by the chemist and bacteriologist working together. An institution containing a department of applied chemistry would therefore be incomplete without a department of applied bacteriology, and I consider that such a department should be established in the Institute. The staff of the department would confine their attention to the study of problems connected mainly with fermentation processes, and would not touch upon medical or veterinary questions. However, the department of applied bacteriology would form the nucleus of a biological section of the Institute, and would be a starting point for developments in this direction.

After careful consideration and consultation with Mr. Mollison and other leading authorities upon the subject in various parts of India I have come to the conclusion that it will be extremely difficult to deal effectively with many of the problems which may come

before us unless a department of agriculture is established in the Institute. There is no question of such a department interfering with or overlapping other institutions, for there are many problems with which the combined departments of the Institute can deal effectively which hardly come within the scope of the government colleges. The problems with which the Institute will have to deal will usually involve manufacturing processes of which the products of agriculture are the raw material. The complete solution of these problems will only be possible if one of our departments can deal with the production of the raw material, and for this reason alone the creation of a department of agriculture is desirable.

I have frequently referred to the solution of Indian problems as part of our work, and in order to avoid any possible misunderstanding with regard to the object of the Institute, I will explain myself rather more fully. Practical problems, and the scientific problems which arise out of them, form the best material upon which to train students. There is always a danger that such institutions as the Institute may become too academic, and the best way to avoid this evil is for the institution to be kept in touch with industries. Further, the aim of many of our students will be to start small industrial concerns of their own, or to obtain appointments in connection with industrial enterprises, and if the Institute is in close touch with industries, the staff will be able to find places for their students more easily than would otherwise be possible.

The six departments of the Institute will form nuclei from which developments may take place in various directions. In association with the departments of chemistry, there should spring up departments of agricultural chemistry, analytical chemistry, tinctorial chemistry, tanning, etc. The department of electrotechnics must develop a mechanical side, and in connection with the combined departments of mechanical engineering and chemistry we may be able to take up textile manufacture, sugar manufacture, and other similar industries. It is true that many of these industries do not flourish locally, but it is better that the men in charge of the departments concerned with them should travel for part of the year, and return to the Institute to conduct their investigations in association with colleagues engaged in the study of allied problems, than that they should work in close contact with the industries, but out of touch with other scientists and technologists. That is the experience of the rest of the world.

Such are my views with regard to the development of the Indian Institute of Science. With regard to the creation of other institutions of a similar character in other parts of India, I should suggest that the Institute should first be given a chance of proving whether the policy which I have indicated is applicable to India or not. In the meantime it is necessary to bear in mind the fact that the first class colleges attached to the Indian Universities are admirable nuclei for the formation of scientific and technological institutes, and that the addition of technological departments to them might go far to turn the thoughts of students towards industries.

Pressure of work has obliged me to postpone the writing of this note till the eleventh hour. I will therefore claim the indulgence of the Members of the Conference for its many imperfections.

MORRIS W. TRAVERS,

*Director, Indian Institute of Science, Bangalore.*

BOMBAY;

*February 10th, 1911.*

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## *(8) Note by the Hon'ble Mr. Chatterton on Technical Education.*

There is a demand all over India for technical education, chiefly engendered by the hope that those who receive such an education will be able to find employment in industrial work. But it is more than doubtful if meeting that demand will not intensify the evil from which India is beginning to suffer—the unemployment of the educated classes. Till Indian capital flows into industrial ventures and whilst European capital is only so employed, there is no hope that Indians, even if qualified, will find any large amount of remunerative work. Except in the cotton trade of Bombay, Indian industrial enterprise is of the very feeblest character and the only hope of development in the future is to begin with operations on a small scale so that the people may gradually acquire experience and a habit of investing money in commercial and manufacturing operations. Following these lines I am endeavouring to work out a policy to be pursued in the Madras Presidency and our work in this direction is meeting with a hopeful measure of success. We have started between 250 and 300 pumping stations and there is room from many thousands of them. Not a few of these are developing into small village factories for working up agricultural produce and, in addition to pumps for lifting water, the oil engines are employed to drive sugar mills, oil mills, rice-hulling machinery and disintegrators for making bone manure. The demand for these last mentioned machines is a very encouraging feature as it shows a tendency to recognise the value of special manures for intensive cultivation. Alongside these agricultural developments, hand-loom weaving factories are struggling into existence and saw mills, tile presses, small cotton gins and miscellaneous labour-saving appliances are becoming popular. Pen factories, pencil works, soap and candle factories, match factories and minor chemical works such as those for the extraction of essences and perfumes have been started, but their products are very inferior and it is questionable if they can compete with the better and not much more expensive articles which are imported from abroad or manufactured in India itself on a large scale under European supervision.

In the Madras Presidency, the Government of India technical scholarships have proved a partial failure as the southern Brahmins who constitute the great bulk of the classes sufficiently educated to be able to derive any benefit from foreign technical education will not go abroad and so far, I think, they have all been awarded to Nair students on the West Coast or to imperfectly educated Sudras, who have not been able to make the best use of the opportunities afforded them. In comparison with other parts of India the cry for technical education in Madras is not very strong, but it may be that hitherto the necessity for giving articulate expression to their needs has not been apparent, as the people generally recognise that Government have been taking a very lively interest in these matters, and it has been quite unnecessary to exert any external pressure. Yet there are no facilities for higher technical education in the Presidency outside the Engineering College which mainly caters for the Public Works Department. I am of course excluding the Agricultural College which is doing very good work in its own sphere. At Bangalore, however, the Indian Institute of Science will commence work this year * * * * Quite recently the Secretary of State has sanctioned the employment of a Tanning Expert, a Tinctorial Chemist and a Weaving Expert, but no appointments have yet been made and no practical steps have been taken to provide them with laboratories or workshops. The necessity for a Tinctorial Chemist arises mainly from the enormous development of the dyeing industry in the town of Madura and the success which attended the educational work carried on in the Government Chrome Tannery clearly revealed the existence of a demand for instruction in the modern processess of tanning and leather dressing which has not yet been met in any other part of India.

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I have shortly to submit to the Madras Government a scheme for industrial and technical education for the Madras Presidency and in doing so I shall have to travel outside the narrow range of industrial education recently assigned to me by the Secretary of State. Briefly, my proposals will be to take advantage of the contemplated removal of the Engineering College to a new site to reconstitute the same, converting it into a high class technological institute capable of dealing not only with the immediate but also with the prospective needs of the Presidency. I would remove from it all the subordinate classes and provide adequate arrangements for the training of mechanical and electrical engineers in addition to those now provided for the civil engineers who mainly pass into the Public Works Department. The most important change, however, that I propose to suggest is that the students should be recruited between the ages of 16 and 18, after they have finished their school course and before they enter into the University classes. They should be selected by a sufficiently difficult entrance examination to exclude all undesirable youths and their course in the college should last five years instead of three, as at present. I would have them taught English and through the medium of their English lessons such history and geography and general information as is necessary that every well educated man should possess. I would devote rather less time to mathematics than is now given and much more to physical science. The engineering syllabuses need considerable modification mainly with a view of eliminating descriptive engineering and devoting more time to laying the foundations of a sound technical training upon which it would subsequently be possible to specialise with reasonable prospects of success. Much more time than is now allowed should be spent in the workshops and laboratories and if the students from the beginning are properly trained in experimental work it should be possible to curtail to a considerable extent the amount of time now devoted to surveying and levelling. Starting with boys at the end of their school course, I am certain we should be able to turn out better trained engineers than is possible under the existing regulations whereby the engineer classes are recruited with full fledged B. A.'s.

For the training of subordinates—overseers and mechanical foremen—I would establish two engineering schools, one in the north and the other in the south of the Presidency presided over by competent principals in the Educational Service. In these schools there should be a civil engineering class and a mechanical engineering class. The age of admission should not be less than 16 or more than 19 and the selection of students should be controlled by an entrance examination. The course should last three years and I would abolish the so-called practical courses which are to a large extent waste of time and money. It is, I think, extremely desirable to reduce to the minimum possible the number of classes. In the past the tendency has been, both in Madras and in other parts of India, to create special classes for the training of special subordinates with the result that the country is flooded with very imperfectly educated men who can only be usefully employed on special lines of work. Besides elementary mathematics and applied mechanics, drawing, workshop practice, surveying and elementary practical physics should form important features in the curriculum and there should also be a certain amount of instruction in English and a vernacular language.

For special technical instruction it is contemplated to establish a textile institute in Madura, already a great centre of weaving and dyeing, where two of the three recently sanctioned experts would be employed. The third who is to deal with tanning will have a leather trade school, probably in the neighbourhood of Madras where there are many tanneries. It is not expected that the work in these institutions will be at the outset other than of an empirical character, but it is thought that gradually a better class of student will be attracted and that ultimately they may develop into high grade schools of an advanced technical character. Industrial education, that is the training of artisans, I would confine to *bonâ fide* artisans and to make it thorough and efficient I propose a system of apprenticeship for five years.

The artisans form a very important section of the population in the south of India; they are extremely backward and such resources as we can devote to industrial education should be employed in bettering their condition rather than in diffusing industrial education over the whole community. Personally, I am strongly of opinion that the workshop or factory is the only place in which artisans can be really well trained and as these will be available to the community as a whole I do not think we need consider those outside the artisan castes further. Mission industrial schools require special consideration—in the south of India they deal with a class of the population (pariahs) outside the pale of Hinduism—and liberal grants-in-aid to suitable schools or workshops is probably the best method of helping them.

Where industries exist suitable technical instruction should be provided for them, but past experience shows that it is perfectly hopeless to expect technical education to produce industrial development. We must take measures which will eventuate in the flow of Indian capital into industrial ventures and, in this direction, in that section of the Department of Industries devoted to helping private enterprise we have met with a marked degree of success and have to some extent gained the confidence of the people. Development is required and to carry it on successfully we want well trained mechanical engineers, foremen and fitters. Mechanical engineering plays such an important part in all modern industries and has been so much neglected in this country that it calls for immediate attention and this is the direction in which expansion of facilities for instruction is most urgently needed. A few men of high scientific attainments are required to work out industrial processes suited to Indian requirements or adapted to local supplies of raw material, but chiefly what is wanted is men with practical experience in running plant and machinery and managing men. Enough science to understand what they are doing is sufficient, but to this must be added business knowledge and commercial experience. Now technological institutes of the highest or of any grade will not turn out such men, to a large extent they are the product of their environment and that environment can only be created for Indians by the investment of Indian capital.

An Imperial technological institute similar to that which has recently been established at South Kensington to be under the direct control of the Government of India is the objective to which the aspirations of nearly all educated Indians are tending. Unquestionably its political effect would be enormous and for this reason, if for no other, it requires very careful consideration. To establish such an institution at least half a crore of rupees would be required and its annual maintenance would amount to probably 7 or 8 lakhs of rupees. It is, I consider, a matter of extreme importance that we should provide in India as soon as possible such facilities for technical instruction as will entirely obviate the necessity of sending students abroad to acquire technical education of the character now sought for by the students to whom the Government of India technical scholarships are now granted. To some extent it would play the part in relation to provincial technical education which the Pusa Institute now plays in respect to provincial agricultural developments.

There are many arguments of a practical character against the establishment of such an institution at the present time, the most important of which is probably that the limited funds available could be better utilised in strengthening local institutions. The Indian Institute of Science, Bangalore, is in some ways an experiment in this direction and it would probably be wise to await the full development of work there before starting a second, and to some exent a rival, institution in another part of India. * * * *
It is highly important that technical instruction should be directly associated with industrial activity and this can be best secured by suitable institutions devoted to local needs—the cotton industry in Bombay, the chemical industries in Bengal, the sugar industry in the United Provinces, tanning in Madras, and general mechanical and industrial engineering in every province.

ALFRED CHATTERTON.

*31st January 1911.*

## (9) *Note on the Thomason College, by Lieutenant-Colonel E. H. deV. Atkinson, Principal.*

I.—The various courses of training given at the Thomason College are :—

(1) A general training in Civil Engineering in courses which fit men to specialize in Civil Engineering (Roads and Buildings), Railways, Irrigation, or Sanitary Engineering in 3 grades :—

1. The Engineer.
2. The Upper Subordinate.
3. The Lower Subordinate.

(2) Electrical and Mechanical Engineering.

(3) Cotton machinery (spinning only).

(4) Industrial education in trades which cannot be learnt or taught in the bazaar.

There are no courses in marine engineering, shipbuilding, mining engineering, metallurgy, metal manufacture or industrial chemistry.

(1) Civil Engineering—

(a) *Engineer class.*—The number of admissions are 20 each year. For these men there are six and seven guaranteed appointments in the Provincial Service, Public

Works Department, and twelve and fourteen apprenticeships of one year available in alternate years. The remainder of the successful students obtain employment either through the College Register or through their own efforts. Statement A shows the number of candidates placed on the Register and the number appointed through the College during the last 10 years.

(b) *The Upper Subordinate class.*—The number of admissions are 40 yearly, and there are 15 guaranteed appointments available. See Statement A.

(c) *The Lower Subordinate class.*—Sixty are admitted yearly, but there are no guaranteed appointments. See Statement A. From 1880 to 1909, 1,254 men passed out of this class, out of whom 733 came from the Punjab. The Punjab has now a small Engineering School at Lahore, and is I believe about to build another. I am given to understand that orders have been issued that preference for employment is to be given to men from the Lahore School. At the present moment there are on the register of employment 50 College passed sub-overseers, out of these 41 come from the Punjab. There are 38 non-College passed men, out of whom 20 come from the Lahore School and 32 in all are Punjabis. The market seems overstocked at present.

(2) Electrical and Mechanical Engineering.

Originally in the College there was an Electrical Engineer class and a Mechanical apprentice class, roughly corresponding with the Civil Engineer and Lower Subordinate classes—

(a) The Electrical Engineer class prepared for the Telegraph Department. As this an Imperial Department one nomination was given yearly to the Colleges in Bengal, Madras and Poona. This principle acted most unfortunately. For instance at Sibpur College a large number would enter the Engineer class, wait until the nomination for the Electrical Engineer class was made and then withdraw. These nominees being picked men, no candidates from Upper India would enter, the reason being that if they could compete with these men they could hold their own in the Civil Engineer class which offered a much better career. The consequence was that only two or three men ever joined the class, and there was no competition to speak of. The course was most unsatisfactory as a special staff could not be spared to give a thorough training to two or three men, and they did their first year's course with the Civil Engineer class, specialising in electricity for the last two years. As, however, they had to be trained for the Telegraph Department, this training was a special one and not a thorough training in Electrical engineering, and the men turned out were of a hybrid class, being neither Civil nor Electrical Engineers. There is, however, no opening for Electrical Engineers of this grade in India at present. The profession may be roughly divided into two classes—firms which are engaged in the manufacture of electrical machinery and appliances, and firms which install machinery. Of the first type there are none in India and of the second type ninety-eight per cent. are European, and will not take Indians in as Engineers. The class is now abolished.

(b) The Mechanical Apprentice class was started in 1897. Nine students were taken in yearly by nomination and did a three years' course at the college, and then were given certificates as Assistant Foremen. No college can turn out Assistant foremen, and in 1902 I found this class in a very unsatisfactory state. A reorganisation was proposed, and the numbers were raised to 15. The entrance was by a very elementary examination, and five nominations were placed in my hands for exceptionally suitable men such as the sons of Mechanics, etc. At the end of 21 months' general training, students were required to specialise as Engine-drivers, fitters, electrical jobbers, or mechanical draftsmen, and to spend the rest of their course at practical work in their special lines. On completing their three years' course they were apprenticed out on indenture for two years to various workshops, the employers paying them R12 and the college R8. If satisfactorily reported on at the end of two years a College certificate was given. This turned out quite a satisfactory arrangement and is at present in force. In 1906 the numbers were increased to 25 and on the whole the men turn out well. This class, however, caters for men who could not even pass into the Lower Subordinate Class. A statement (B) is put up showing what these men have done in the last five years. I regret that I have not had time to complete it, but I believe nearly all the men are in employment.

(c) *The Technical class.*—It was felt that the Mechanical Apprentice class catered only for a man who was roughly of the grade of sub-overseer, and that the time had come to give men of superior education a chance, and to train men of a grade corresponding to the Upper Subordinate class.

In 1906 the Technical class was formed to meet the demand for men "who have not only had a practical training in a Mechanical workshop, but have sufficient general education to qualify them for positions of responsibility, such as supervisors, foremen, and ultimately managers of factories in which machinery was employed." The number was fixed at 30 and admission was given by nomination by Commissioners of Divisions, Districts Boards being authorised to give scholarships of R12 a month.

Numerous applications were received and the Raghu Nath Pershad Mills offered to support five students, while the Vaishya Maha Sabha asked for 2 nominations. A circular was issued to all parents setting forth the objects of the class.

As time went on, however, it was seen that the organisation of the class was not successful owing to the system of nomination; and though the qualifying test was the Entrance or School Final the standard of education was so diverse that it rendered tuition very difficult. Students could specialise in electric installation work, motor cars, steam and gas engines, cotton, ice or sugar manufacture. It was found that though warned that they must be prepared to make arrangements for themselves as regards apprenticeship and work, students were constantly enquiring what was going to be done for them. The chief reasons for the non-success of the class as constituted were that a certain percentage of the students had not really come for a technical training but to join Roorkee College and to take advantage of the District Board scholarships; no arrangements had been made for official financial assistance during apprenticeship; there was no special cotton instructor; they were mostly of too high a class for motor car drivers; no arrangements could be made for apprenticeship in the sugar industry except in the Agricultural Department.

A reorganisation was proposed and in forwarding it to Government I stated that if the class was reorganised as proposed it would in my opinion be a success. Meanwhile the Naini Tal Technical and Industrial Conference had recommended that the new branch Technological Institute at Roorkee should be a high grade and research Institute. In March 1909 the recommendations for a reorganisation of the technical class were not accepted and it was stated that the Technological Institute at Roorkee "is to be an industrial Sandurst, and its object is to train the officer class of the industrial army, the men who by status, education or possession of capital, are fitted to be leaders." The instruction was to be confined to electrical and mechanical engineering, and the technical class held in abeyance. The cotton section with an instructor was to be retained for the time being.

In accordance with these instructions a draft circular and a syllabus of the course was prepared to meet the above requirements but in forwarding it, it was stated that it seemed doubtful whether many candidates would be forthcoming for the following reasons :—

(1) If a candidate could pass an entrance examination of the grade proposed, he could pass into the Civil Engineering class, and would probably be more tempted to join this well-known and assured avenue to a livelihood than the new Department of Technology.

(2) To join the latter, he must have facilities at his command in the way of capital or business connections which would help him to pursue the industry he had selected. Very few Indians were at present in this position as regards electrical or mechanical engineering, though a few might be forthcoming for the cotton industry.

Government approved the proposals as an experiment, and they were duly published; but up to date no candidates at all have applied for admission to the Department of Technology.

The question has been again referred back to the Committee of Management and they have stated that as regards the foreman class the present Mechanical Apprentice class, if gradually raised in standard as opportunity offers, already provides for turning out a superior class of Mechanics, who should quickly rise in workshops to be foremen, and make better foremen when they have reached that position.

With regard to higher grade technical instruction they were of opinion that the main reasons why no candidates were forthcoming for the Department of Technology were that it was not well enough known in the provinces that such a class had been formed, and that the entrance qualifications had been pitched at too high a standard for the present conditions in India. They recommended that these defects should be remedied and that all candidates for entrance should be nominated by them, and that all the technical classes of the college should be classed under the heading Department of Technology, which should comprise—

(1) The higher division.

(2) The lower division or Mechanical Apprentice class.

(3) The automobile driver class.

The College has now prepared revised proposals. The higher division to comprise two sections. :—

(1) Electrical and Mechanical Engineering.

(2) Textile.

The Electrical and Mechanical Engineering section is arranged to prepare students for employment on electrical and other power installations. After obtaining the necessary practical experience on commercial works they should be qualified for employment as follows :—

A. Taking charge of electrical plants.

B. Tendering and contracting for the supply of electrical and mechanical plant and materials.

C. Appointments in charge of large electrical supply companies.

The textile section is intended to train students related to capitalists and manufacturers who would in the natural course become managers of the business side of mills or factories, so that after obtaining the necessary practical experience they shall be fitted to manage the teachnical side also.

The educational qualification for nomination will be the school leaving certificate with drawing, and to meet the case of suitable candidates who have not passed this test, a special entrance examination of similar standard will be held by the College.

To show, however, that a class of the grade of the technical class is likely to be a success I append a Statement (C) showing as far as I can ascertain what has become of the passed students of the late technical class. This class was undoubtedly too nearly of the same standard as the Mechanical Apprentice class and every effort will be made to create a sharp defining line between the two classes.

*III.—Cotton.*

As above stated training in the cotton industry will be given in the textile section of the higer division. There is now an expert whole-time instructor and the plant is fairly complete for instruction in spinning, but additional plant is required for instruction in weaving. When no candidates were forthcoming for the Department of Technology, a special circular was issued for a cotton class. The educational qualifications were fixed at a minimum of the school-leaving certificate, but out of 12 applicants for admission none possessed this qualification. They were, however, admitted on probation and after three months six were removed as unsuitable.

*IV.—Industrial Education.*

This is carried on at the College till the industrial schools of the Province are fitted to take over the work, though it is doubtful whether this will ever be the case with regard to some of the sections. These are :—

1. Lithographic draftsmen.
2. Lithographic pressmen.
3. Photographers.
4. Photo-mechanical operators.
5. Electrical jobbers.
6. Engine-drivers.

There are always a number of applicants for admission, especially to the first sections.

E. H. deV. ATKINSON, *Lieutenant-Colonel.*

*The 10th February 1911.*

STATEMENT A TO COLONEL ATKINSON'S NOTE.

*Register showing the number of candidates registered and the number who have obtained employment.*

| Grade. | 1901. | | 1902. | | 1903. | | 1904. | | 1905. | | 1906. | | 1907. | | 1908. | | 1909. | | 1910. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. | Registered. | Appointed. |
| Engineers . . . | 8 | 4 | 4 | 4 | 5 | 5 | 1 | 1 | 2 | 2 | 10 | 8 | 14 | 6 | 9 | 8 | 12 | 7 | 9 | 5 |
| Upper Subordinates . | 28 | 28 | 41 | 20 | 30 | 27 | 23 | 15 | 20 | 28 | 23 | 17 | 33 | 22 | 23 | 21 | 29 | 18 | 40 | 20 |
| Lower " . | 144 | 136 | 150 | 122 | 145 | 136 | 109 | 109 | 120 | 119 | 114 | 95 | 128 | 118 | 108 | 101 | 134 | 89 | 126 | 63 |
| Draftsman . . . | 14 | 9 | 23 | 8 | 11 | 11 | 11 | 16 | 12 | 8 | 24 | 15 | 21 | 6 | 16 | 5 | 23 | 6 | 25 | 9 |
| Mistris . . . | 3 | 3 | 10 | 6 | 13 | 2 | 5 | 7 | 5 | 7 | 12 | 6 | 4 | 5 | 2 | 1 | 4 | 3 | 9 | 2 |
| Mechanics . . . | 11 | 6 | 12 | 10 | 2 | 2 | 3 | 1 | ... | 4 | ... | ... | 3 | 1 | 6 | 2 | 4 | 3 | 9 | 2 |
| Tracers . . . | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 2 | 8 | 1 | ... | 1 | 9 | ... | 15 | ... |
| INDUSTRIAL CLASSES. | | | | | | | | | | | | | | | | | | | | |
| Press Workers, I . . | 4 | 2 | 3 | 2 | ... | ... | 3 | ... | 4 | ... | 3 | 4 | 13 | 3 | 19 | 9 | 11 | ... | 11 | 2 |
| Photo Mechanical, II . | 1 | ... | 2 | ... | 1 | 1 | 2 | 1 | 1 | 1 | ... | 1 | ... | ... | ... | ... | 2 | ... | 1 | ... |
| Art Handicraft, III . | 3 | ... | 4 | 1 | 3 | 1 | 6 | ... | 1 | ... | ... | 1 | ... | ... | ... | ... | 1 | ... | ... | ... |
| Motor Car Drivers . | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 4 | 4 | 26 | 22 | 10 | 10 | 8 | 8 |
| TOTAL . | 216 | 188 | 249 | 173 | 210 | 185 | 163 | 150 | 165 | 169 | 190 | 149 | 223 | 166 | 209 | 170 | 239 | 138 | 253 | 111 |

STATEMENT B TO COLONEL ATKINSON'S NOTE.

*Statement showing mechanical apprentices passed out and got employment during the last five years.*

| No. | Names. | Appointment secured. | Pay. |
|---|---|---|---|
| | *July 1906.* | | R |
| 1 | Abdul Rahman . . | Motor car driver to Lieutenant-Governor, United Provinces. | |
| 2 | Inder Singh . . . | Water Works Inspector, Moulmein, Burma. | |
| 3 | Ram Ratan . . . | Government Telegraph Department, Calcutta. | |
| 4 | Manohar Lal . . . | Locomotive Workshop, North Western Railway, Lahore. | |
| 5 | Mathura Prasad . . | Dead. | |
| 6 | Vindeshwari Prasad . . | Dead. | |
| 7 | Bishan Das . . . | In charge adjusting shop, Government Telegraph Workshop, Alipore. | 150—25—250 |
| 8 | Mubarak Ali Shah. | | |
| 9 | Ram Richpal. | | |
| 10 | Atma Ram. | | |
| 11 | Bishan Singh . . . | Engine driver, Military Works, Bareilly. | |
| 12 | Rattan Singh . . . | Waterworks, Lansdowne. | |
| | *July 1907.* | | |
| 1 | Hem Chandra Baugh . | In charge Electrical Power House, Military Works Services, Bareilly. | 80 |
| 2 | Abdul Aziz . . . | Lecturer assistant and mechanic for Physical Laboratory, M. C. College, Allahabad. | 50—5—75 |
| 3 | Ramji Das . . . | Agricultural Department, Punjab. | |
| 4 | Risal Singh . . . | Sugar Factory, Bareilly. | |
| 5 | Muhammad Amin . . | Block Inspector, Signalling Department, North Western Railway. | |
| 6 | Ganesh Prashad . . | Electric Light, Naini Tal. | |
| 7 | Behari Ram. | | |
| 8 | Sita Ram. | | |
| 9 | Gul Mohammad. | | |
| 10 | Muhammad Rafiq . . | Motor car driver to Chief Engineer, Punjab. | 50 |
| 11 | Arthur McMullen . . | Employed at Messrs. F. & C. Osler, Bombay. | R150 a month with board and quarter *plus* a percentage. |
| 12 | Bindra Singh . . | Employed in Land Records and Agriculture Department, Bareilly. | 50 |
| 13 | Sankar Lal . . . | Employed in Land Records and Agriculture Department, Partabgarh. | 50 |
| 14 | Hukam Singh . . . | Dead. | |
| | *July 1908.* | | |
| 1 | Radha Ram . . . | Gorakhpur Industrial School. | |
| 2 | Bishan Sarup . . . | Allahabad. | |
| 3 | Jawala Parshad . . | Apprentice, Telegraph Shops, Calcutta. | |
| 4 | Ghulam Muhammad . | Apprentice, Central Workshops, Amritsar. | |
| 5 | Chandu Lal . . . | Electrician, North Western Railway, Lahore. | |
| 6 | Siri Ram . . . | Hon'ble Pandit Jwala Prasad's Power House, in charge, Shahjahanpur. | 30 |
| 7 | Jauhri Ram . . . | Engine driver, Dibrugarh, Assam. | |
| 8 | Ram Chandar . . . | Agricultural Department, United Provinces. | 60 Temporary. |
| 9 | Khusya Singh | Apprentice, Electric Tramways, Delhi. | |

*Apprenticeship.*

| No. | Name. | Appointment secured. | Pay. |
|---|---|---|---|
| | *July 1909.* | | R |
| 1 | Tarak Nath Mitra . . | Apprentice, Messrs. Burn & Co., Calcutta. | |
| 2 | Muhammad Nasir Husain Khan. | Assistant to the Professor of Manual Training, Higher Grade Training College, Allahabad. | 40—5—60 |
| 3 | Pramatha Nath Biswas . | Apprentice, Messrs. F. & C. Osler, Calcutta. | |
| 4 | Muhammad Sadulla . | Apprentice, Land Records and Agriculture Department, United Provinces, Allahabad. | |
| 5 | Khair-ud-din Khan . . | Apprentice, College Workshop. | |
| 6 | Mulk Raj . . | Do. do. do. | |
| 7 | F. J. Gonzalves . . | Employed in Bengal-Nagpur Railway Workshop, Khargpur. | 100 to 200 |
| 8 | Mohan Lal . . . | Apprentice, Telegraph Workshops, Alipore. | |
| 9 | Ishar Singh . . . | Apprentice, Electric Works, Bikaner. | |
| 10 | Kishan Singh . . . | Do. do. Mussooree. | |
| 11 | Sri Krishna . . . | Do. Ice Factory, Farrukhabad. | |
| 12 | Muhammad Said . . | Do. Signal Shop, North Western Railway, Lahore. | |
| 13 | Chaitanya Swarup . . | Apprentice, Woollen Mills Company, Cawnpore. | |
| 14 | Muhammad Abu Tahir . | Apprentice, Government Harness and Saddlery Factory, Cawnpore. | |
| 15 | Inder Jit Sharma . . | Apprentice, Electric Power House, Meerut. | |
| 16 | Monindra Nath Ghose . | Apprentice, Johnson and Phillips, Kent. | |
| 17 | Nand Ram . . . | Do. Electric Tramway Company, Delhi. | |
| | *July 1910.* | | |
| 1 | Mitra Sen . . . | Apprentice, Electric Works, Bikaner. | |
| 2 | Anant Lal . . . | Do. College Workshops. | |
| 3 | Ramji Das . . . | Do. Electric Tramway Company, Delhi. | |
| 4 | Baru Mal . . . | Apprentice, Electric Works, Bikaner. | |
| 5 | Dalip Singh . . . | No apprentice yet. | |
| 6 | Radhika Narayan . . | Apprentice, College Workshops. | |
| 7 | Ahmad Ali . . . | No apprentice yet. | |
| 8 | Abdul Karim . . . | Apprentice, Canal Foundry and Workshops, Roorkee. | |
| 9 | Jyoti Prasada Vaish . | Apprentice, Electric Tramway Company, Delhi. | |
| 10 | Nanak Chand . . | Apprentice, Electric Works, Bikaner State. | |
| 11 | Vikramanditya Pandey . | Apprentice, Electric Works, Bikaner. | |
| 12 | Chanan Ram . . . | Do. Telegraph Workshops, Alipore. | |
| 13 | Mul Chand . . . | Apprentice, Electric Works, Chamba State. | |
| 14 | Ram Chand . . . | Apprentice, College Workshops. | |
| 15 | Majid Ali Khan . . | Do. Rampur State. | |
| 16 | Satyandra Nath Sanyal . | Apprentice, M. W. Electric Works, Bareilly. | |
| 17 | Shib Lal . . . | Apprentice, Electric Works, Bikaner. | |
| 18 | Atma Ram . . . | Do. do. do. | |

STATEMENT C TO COLONEL ATKINSON'S NOTE.

*List of passed students of the Technical class showing where they went and what they are doing now.*

| No. | Names. | Where they went. | What they are doing. |
|---|---|---|---|
| | | *34 Entered.* | |
| | | *1909, Section A, Electrical Engineering.* | |
| 1 | Munna Lal Misra . . | Patiala State Electrical Works. | In independent charge of a sub-station and machinery. |
| 2 | Shambhu Nath Tiwari . | Messrs. Seemen Brothers, Calcutta. | Still there, apprenticeship expires on February 15th 1911. |
| 3 | Har Narain Tiwari . . | Ditto. | Ditto. |
| 4 | Sri Krishna Srivastava . | Signal Engineer, Oudh and Rohilkhand Railway, Lucknow. | Still there. |
| 5 | Brij Krishna Sibu . . | Bikaner State Electrical Works. | Offered employment as Assistant Engineer in Nepal and Bikaner Electric Works |
| 6 | Sri Krishna Tiwari . . | Patiala State Electrical Works. | Now a clerk in the Municipality at Almora. |
| 7 | Jagmohan Lal Bhatnagar . | Messrs. F. & C. Osler, Limited, Calcutta. | Still there. |
| 8 | Chandi Pershad Varma . | Patiala Electrical Works . | Left Patiala. Applied for post under Director of Industries. |
| | | *1909, Section B, Mechanical Engineering, Cotton.* | |
| 1 | Dhanpal Chandra . . | Ram Chandra Cotton Mills, Hathras, Assistant Spinning Master, R45. | Passed City and Guilds Examination, still at Hathras. |
| 2 | Bawan Datt Shukala . | Canal Foundry and Workshops, Roorkee. | Appointed, Rohilkhand and Kumaon Railway Workshop, Lucknow. |
| 3 | Ram Sarup . . . | Ginning Factory, Diba District, Bulandshahr. | Ditto. |
| 4 | Banwari Lal Gupta . . | Woollen Mills Company, Cawnpore. | ...... |
| 5 | Shambhu Nath . . | Siemen's Dynamo Works, Calcutta. | ...... |
| 6 | Durga Prasad Saksena . | Locomotive Workshop, Bengal and North-Western Railway, Gorakhpur. | ...... |
| 7 | Manmatha Nath Bhuttacharya. | Serampur Cotton Mills, Calcutta. | ...... |
| 8 | Sri Ram . . . | ...... | ...... |
| 9 | Krishna Sarup . . | Elgin Mills Company, Cawnpore. | ...... |
| 10 | Ganga Sahai Saksena . | ...... | ...... |
| 11 | Salig Ram Naurahi . . | Cawnpore Mills. . . | Left unsatisfactorily. |
| 12 | Murli Manohar . . | Muir Mills, Cawnpore. | R30 a month. |
| | | *1909, Section C, Mechanical Engineering, Sugar.* | |
| 1 | Mirza Shahzada Alam Beg | Assistant Director of Land Records and Agriculture, Partabgarh. | Agriculture Department, on R40 per mensem. |
| 2 | Narain Lal . . . | D. Waldie and Company, Chemical Works, Cawnpore. | |
| 3 | Sirajul Hasan . . . | Assistant Director of Land Records and Agriculture, Partabgarh. | Appointed on R40, on sugar refineries. |

*List of passed students of the Technical class showing where they went and what they are doing now*—contd.

| No. | Names. | Where they went. | What they are doing. |
|---|---|---|---|
| | | *1910, Section A, Electrical Engineering.* | |
| 1 | Balmokand Kapur . . | Indian Institute of Science, Bangalore. | Assistant Engineer, Simla Hydro-electric Scheme. |
| 2 | Bahadur Mirza Kazalbas . | Signal Engineer, Oudh and Rohilkhand Railway, Lucknow. | Still there. |
| 3 | Jageshar Dayal . . | Under Electric Engineer, Bengal and North-Western Railway, Gorakhpur. | Still there. |
| 4 | K. Muhammad Hasnain . | ...... | ...... |
| 5 | Mool Chand . . . | ...... | ...... |
| 6 | Banarsi Das Jain . . | ...... | ...... |
| 7 | Raghunandan Prasad . | Apprentice, Electrical Department, Philibit Sugar Works | Still there. |
| 8 | Prayag Narayan Varma . | Electrical Engineer, Oudh and Rohilkhand Railway, Lucknow. | Assistant, City Lighting Scheme, Lucknow. |
| | | *1910, Section B, Mechanical Engineering, Cotton.* | |
| 1 | Harsaran Das . . . | Ajmere . . . . | Passed City and Guilds Examination. |
| 2 | Triloki Nath Khanna . | Mirzapur Cotton Mills, Assistant. | Ditto. |
| 3 | Baij Nath Dube . . | ...... | ...... |
| 4 | Tota Ram . . . | Cawnpore Cotton Mills Company, apprentice. | Passed City and Guilds Examination. |
| 5 | Banarsi Das Vaish . . | Meerut . . . . | Ditto. |
| 6 | Ram Datt Joshi . . | Teacher of Manual Training, Meerut. | Ditto. |
| 7 | Saiyed Mazhar Mahmud . | Elgin Mills, Cawnpore . | ...... |
| 8 | Triloki Nath Gupta . . | Messrs. Greaves Cotton & Co., Bombay. | Passed City and Guilds Examination. |
| 9 | Bala Datt Sharma Jeotirbid | ...... | ...... |
| 10 | Har Prasad Srivastava . | Cawnpore Cotton Mills . | Passed City and Guilds Examination. |
| 11 | Madan Mohan Lal . . | Ditto. | Ditto. |
| | | *1910, Section B (a), Mechanical Engineering.* | |
| 1 | Syed Ali Jafar . . | ...... | ...... |

## (10) *Note on prospects of industrial employment of trained graduates for the United Provinces by W. R. Wilson, Esq., B. Sc., A.M.I.C.E., etc., Director of Industries, United Provinces of Agra and Oudh.*

The first proposition is that we must turn out such graduates as shall be needed to meet the wants of industrial enterprises. It is not easy to find out what is needed but it is still more difficult to turn it out. I have made extensive enquiries in this direction and have arrived at the conclusion that if we can turn out a graduate willing to work with his own hands and able to show others how to do the work, really know what he is doing and why he does it, and to keep factory hours—which may be as from 6 A.M. to 6 P.M., in the summer and from 7 to 5 in the winter—we succeed. Otherwise, we fail.

In this spirit I have started the Gorakhpur Industrial School and have taken steps to bring the Lucknow school into the same line, but this has to be gradually done. This action is to meet the complaint which had been addressed to me by several employers of labour, that the graduates of technical schools generally are inclined to shirk the full working hours—some go further and say that these lads are above their position and wish to begin at the top of the ladder, straight off. This to a great extent can be counteracted by the personal influence of the staff, if well directed. Let no one think that working factory hours means necessarily a long and tiring actual day's work. In a factory one process or appliance at all times waits on another and there are intervals of lost time and enforced leisure, so that in fact a day's office work from 10 to 5 may be more trying than a factory day from 6 to 6. There is no factory in which one man carries out all processes himself from the raw material to the

finished article, hence there is often time lost. I have enlarged on this point though it may seem to have nothing to do with the graduate, because the graduate if he is to be acceptable to the factory owner must "go through the mill." No one has ever held out any hope to me that he would take a graduate and make him a foreman, chargeman or the like, at once. All that we can do in our schools is by rigid discipline and a study of factory methods to equip a lad with both the knowledge and training to enable him to join a factory and learn the practical side of the work quickly and soundly, so that he may be worthy of a position of trust in a year or two and I have yet to meet the factory owner who is so short-sighted that he will not promote a really useful man.

The second proposition I advance is that we must get over the very strong prejudice which exists against manual occupations generally. People who know more than I say that this is dying out but it is still very strong. It is here that our friends not directly concerned in the problem can be of so much use to us. I have myself too often seen a factory ruined because the owners (by an extension of this idea) seemed to think that any sort of man would do to look after it and that it was rather beneath their dignity to try to study the process or check waste or do anything except look into the accounts. I will give an instance by way of illustration (on different lines) which came before me this week in the United Provinces Exhibition. One of the model factories which are doing such excellent work took on a technical school graduate with a view to his studying the work from the start of the preparations for the exhibition and afterwards giving assistance in the demonstration work, with, of course, the chance of employment by any one who might desire to set up a similar factory or who already had one. I remark in parenthesis, that such a "job" is eagerly sought after by lads in England, who pay premia for such. The lad was well paid, however, and nothing that I know of was done to discourage him. Just at the start of things, when every one as the saying is "had their coats off," this lad was expected to do some fitting. He pretended that he could not do it, but I myself believe that it was the absurd notion of dignity which deterred and that he could have done the work quite well. Result, a chance lost to a promising school graduate. I was called on to get some useful workman and conditions of supervision were altered accordingly.

These remarks may seem rather commonplace but I hope to give some useful information below; for, having said something about training I must prove that the demand exists for the trained product. I suppose no one will deny that if a demand exists and if one can supply it the supply will be taken up.

In these Provinces there are 215 factories within the scope of the Factory Act. Having been the general manager of a factory myself I can say (and I am confirmed in the opinion by many owners) that each factory would gladly entertain a graduate as under-study to the factory engineer and such a post would in a year or two command good pay (ranging from ₨50 to 300 per mensem according to the size of the factory and conditions), but they will not put on a man on ₨30 even at once, till he had shown his ability. In such a case the would-be assistant engineer must start as a fitter on 5 annas to 8 annas per day (according to locality) and demonstrate his value.

Further, in many of these factories there are several departments each controlled (under the general supervision of the mill manager) by a foreman or "master", who is assisted by one or two clerks and one or two mistris, with several fitters or the like. I can speak from practical experience when I say that there is a place here for a man who can combine, on a higher scale, the qualifications of the clerk and the mistri alluded to and be of use as an under-study to the foreman in case of sickness or leave. Few factories are so large that they can afford to employ spare staff to fill such casual vacancies and in this class of work I discern an opening on pay from ₨80 to 200 per mensem This applies to a wide scale of specialised workers, comprising "textile" (a very wide class in itself) dyeing, tanning, painting and metal finishing industry, and being specialised, will in the end command high pay.

There are other openings for trained mechanics who specialise in different directions. The efforts of the Agricultural Department have led to much extension in the use of power pumping. Every group of such small plants gives opportunity to a man with some business ability and organising power to work a supervising and repair agency to serve the group. The same may be said as to the increasing out-put and sale for machines for all purposes. One dealer in hosiery machines which I have been advocating as a typical cottage industry tells me yesterday that he has sold from Lucknow ₨20,000 worth of such machines in 1910. This gives another opening on the lines above alluded to.

Taking the existing factories only and bearing in mind that I am not suggesting the replacing of one man by another, but pointing to openings already in existence, we have 215 + 160 = 375 available posts now waiting for men. I will not write upon the needs of the growing expansion of industrial work nor the side lines apart from factories above alluded to, but take these 375 possible vacancies. Naturally, these could not be all available every year; taking the fair figure of 10 per cent. for wastage and contingencies, there will be 37 or 38 posts available every year for technically qualified graduates, in these Provinces and under present conditions. This is reassuring enough, I think, but we must proceed slowly and carefully, check any tendency on the part of youths who should be still under training to leave and go to some work which holds out the immediate promise of better present pay, and guide, so far as we can the graduate who is just at the most difficult age to guide.

Whether it would not be better to "bind" him as an apprentice on the English system for a term of years in order to complete his training before leaving him quite free to choose his future, is a wide subject which I am now considering.

## *(11) Note by T. S. Dawson, Esq., Principal, Victoria Jubilee Technical Institute, Bombay, dealing with the subject-matter of the Resolution proposed to be moved in the Imperial Legislative Council by the Hon'ble Rao Bahadur R. N. Mudholkar.*

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### PART I.

#### INTRODUCTORY.

Generally speaking, instruction is needed to impart knowledge where knowledge is absent and to improve the quality and quantity of knowledge where knowledge is present. From this broad point of view there is always a present demand for instruction in all branches of knowledge But since every system of instruction needs to be considered in connection with the activities, the practical needs and the life interests of the people concerned, the present demand for instruction in any department is best conceived by an approximate estimate of the numbers actually engaged in that department and of the numbers who, from inclination and necessity may, if instructed, enter the department with advantage to themselves and profit to the department.

2. From this general question of the demand for instruction, I turn to the consideration of the specific departments mentioned in the resolution in the order in which they are stated, with a view to supply as far as can be done at present, the information required on the points of reference.

#### RAILWAY ENGINEERING.

3. Strictly Railway-engineering is Civil, Mechanical and Electrical Engineering specialised in connection with the projecting, constructing and maintaining of Railways. It ranges over a very wide field. It gives employment to numerous persons possessing technical knowledge of various grades and manual dexterity of diverse degrees. It is usual to divide these persons into three principal classes: (1) Workmen or "Hands," (2) Foremen or Overlookers, and (3) Engineers or Superintendents. The army of workmen are disciplined by the Foremen who take their instruction from the Engineers or Superintendents. The demand for instruction in the case of workmen is limited to the acquisition of manual skill in the production of their work. The Foremen need an education superior to that of the workmen whose work they have to overlook and their instruction must include a knowledge of the scientific principles underlying the work of their "Hands." The education of the Engineers or Superintendents needs to be of a higher order than that of the Foremen. The workmen are drawn from the masses of the population and a large majority of them is almost illiterate. The Foremen are generally the more experienced workmen who can boast of some education. The Engineers or Superintendents are supplied by various schools, colleges and educational institutions and the demand in their case is for practical experience.

The railways have large workshops which meet the demand of the workmen for manual dexterity and "the proper training school for workmen is the factory or workshop." The demand of the Engineers and Superintendents for practical experience is also met in these workshops and in the different departments of the railways. It is the instruction of the Foreman that requires attention. "He must be familiar with the various branches of work he is to overlook and the training which he receives as workman affords him but scanty opportunities of obtaining this general knowledge. The Foreman needs also a generally superior education."

One method which has been adopted for the training of Foremen is by educating young men of the ordinary Secondary schools in technical schools. "It is thought that by developing the intelligence and skill of those young men who, from inclination and other favourable circumstances, show aptitude for scientific and practical work, they will be able when they enter the workshop to make better and much faster progress and to acquire that general knowledge of their work and to exhibit those special aptitudes which are considered necessary to qualify workmen for the position of Foremen." This is the aim of the teaching given at the Victoria Jubilee Technical Institute in its Mechanical and Electrical Engineering Departments.

The institute has been able to secure the co-operation of the railway authorities to some extent. They have agreed to give employment every year to some of the passed students of the Institute. I do not consider that there is need at present to create any new institution for giving instruction in Railway Engineering. The College of Science, Poona, includes Railway Engineering as a branch of the course of Civil Engineering. What might be done is to secure the support of Government and the co-operation of Railway authorities with a view to reserve for the best students of the College of Science and of the Victoria Jubilee Technical Institute some fairly well paid appointments in the Engineering and Telegraph Departments of Railways as Assistant Engineers and Telegraphs Inspectors. In these positions, there is little doubt the best products of the Poona College and of the Bombay Institute will prove useful to the Departments they will serve and bring deserved credit to the institutions in which they were trained.

### MARINE ENGINEERING.

4. Marine Engineering is essentially Mechanical Engineering practised on Ocean-going or Coasting Steamships instead of on land in factories and workshops. Persons trained in the Mechnical Department of the Bombay V. J. Technical Institute are eligible and will be quite capable after the required period of practice in Ocean-going Steamships of passing the Board of Trade Examination in Marine Engineering as evidenced by the fact that one of the passed students of the Institute who is now an assistant teacher in the Mechanical Engineering section holds a Board of Trade Certificate as Marine Engineer. There are a number of Steamship Companies who employ what are known as "Uncertified Assistant Engineers" in addition to the "Certified Chief and Assistant Engineers." They are required by law to provide on every Boardship. There is no present demand for Marine Engineering because the openings for employment are conventionally reserved for certain British subjects, except in the coasting steamers which are comparatively small in number and size and which pay comparatively low salaries. If the authorities could be induced to remove the barriers to the appointments of "Uncertified Assistant Engineers" on Ocean-going Steamers owned by the large Navigation Companies who hold "Mail Contracts" from Government, there is little doubt that some of the young products of the Bombay Institute will dare the difficult sea-conditions in spite of their religious systems and will bring credit to the institute and give satisfaction to their employers and advance ecomony of working cost of the ships.

### SHIP-BUILDING AND NAVIGATION.

5. I am of the opinion that there is no present demand for instruction in ship-building and navigation which requires consideration.

### MINING ENGINEERING AND MINING CHEMISTRY.

6. Major Scudamore in his paper on the Training of Engineers in Bombay read before the Madras Industrial Conference advocated the opening of a department for instruction in mining under the ægis of the Poona College of Science. I am of the opinion that a Mining School will be better located at Poona than in Bombay on account of the latter's distance from mining districts in the Presidency.

### METALLURGY AND THE DIFFERENT DEPARTMENTS OF INDUSTRIAL CHEMISTRY.

7. This is an important branch of technical education and one in which there is a certain growing demand for instruction. The Victoria Jubilee Technical Institute opened a few years ago a department of chemistry and a scheme for the development of this section is under consideration which will enable it to provide instruction in—

(1) Sugar refining;
(2) Metallurgy;
(3) Manufacture of oils, fats, paints, varnishes, candles and soap;
(4) Dyeing, bleaching and sizing of yarns and cloths;
(5) Analysis of foods and drugs.

### HIGHER COURSES IN MECHANICAL AND ELECTRICAL ENGINEERING AND IN TEXTILE MANUFACTURE.

8. This has direct reference to the work of the V. J. Technical Institute in its older departments. The standards of instruction 20 years ago were necessarily low. Then the Anglo-Vernacular standard V was the preparatory training demanded for admission. It was raised to VI, then to the Matriculation and now it is higher than the Matriculation, demanding as it does at the Institute, Entrance Examination, some knowledge of drawing, mathematics and chemistry.

Admission to a Technological Institute implies the previous acquisition of elementary technical Education. Where it is absent it has to be provided by the Institute in the early period of its courses of instruction. Technical education ought to begin in the elementary school with drawing, modelling in clay and manual instruction in wood work. Its next stage has to be accomplished in the secondary school where instruction in linear drawing, manual training of an advanced kind in wood and metal, practical mathematics, and some Laboratory work in elementary physics and chemistry ought to be imparted. In proportion as this is done in the primary, middle and secondary schools in that proportion will the desired advance in the standard of teaching in the technical or technological institute be feasible. The courses of instruction at the V. J. Technical Institute have been recently extended to four years to enable the inclusion of important subjects which were necessarily omitted in the old three years courses. Machine design, internal combustion engines, gas producers, testing of materials and advanced workshop practice are now included in the course of mechanical engineering and there is room for further development to which the authorities are alive. In electrical engineering the introduction of instruction in electro metallurgy, telegraph and telephone is under consideration. These improvements will go a great way to meet the demand for higher instruction in mechanical and electrical engineering.

### TEXTILE MANUFACTURES.

9. The course of instruction in textile manufacture has also been recently extended to four years. Weaving design and jacquard loom work has been added. A higher class of work in all departments of the Textile School is demanded, and it is proposed to provide instruction in calico-printing and hosiery and thread manufacture—departments which cannot fail to be of considerable utility to the great textile industry of the country. The students are regularly taken out to mills and this is a great step in obtaining the co-operation of the mill authorities and its educative influence in smugging home the benefits to technical training and appreciation of its aim and work is not little.

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## PART II.

### GENERAL VIEW OF TECHNICAL AND INDUSTRIAL EDUCATION.

10. The resolution is worded in very general terms. It seeks inquiry into the large question of the present position and needs of the country in the matter of technical and industrial education or the kind and extent of the education that should be provided for the industrial development of the country. Already the discussions on the subject have extended far and wide. Various views have been put forward, and in some cases there appears to be no insignificant confusion of terms and definitions. It is therefore necessary to have notions of the objects of technical education, its grades or stages, its proper place as a factor in industrial development and the lines on which it should be placed and the manner in which it should be developed to the lasting good of the country.

11. The aim should be to increase the production of raw materials of improved quality not for the purposes of export as raw materials merely, but with a view to manufacture it into articles for home consumption and foreign export and thus to reduce the volume of costly imports of goods manufactured from raw materials previously exported from the country.

12. It should be noted that machine-made articles are steadily replacing hand-made articles even in the villages ; that no hand industry can long hold its own against the competition of steam and electricity ; that upon the co-ordinate development of the agricultural, mineral and manufacturing industries of the country depends its ultimate regeneration, and that upon the co-ordinate employment of capital raised on the Joint Stock System, enterprise based on truly patriotic feeling and labour trained in the best manner and best equipped departments of science and technology rests the development of any industry.

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### TECHNICAL EDUCATION AS DISTINGUISHED FROM INDUSTRIAL EDUCATION.

13. In the English Act of 1889, Technical Instruction means instruction in the pinciples of science and art applicable to industries and in the application of special branches of science and art to special industries or employments. Under this Act trade instruction or workshop training in the actual practice of any trade may be given only so long as that practice deals with principles and methods of work and does not include teaching continued for the purpose of gaining manual dexterity in the practice of that trade. This is the accepted definition of the term Technical Education and it differs from the teaching given for the express purpose of gaining manual dexterity in the practice of a particular trade or industry. This latter is appropriate to Industrial Trade or Handicraft-Education.

14. It is this distinction between the spheres of Technical and Industrial education that is apt to be overlooked or insufficiently recognised in all discussions on the subject of the education needed for the industrial development of the country.

15. Technical education ranges over a vast field.

It may be conveniently divided into the following stages :—

(1) The lower preparatory (practical) stage which should find its proper place in the primary and middle schools for general education. It embraces instruction in drawing (freehand and model), clay modelling and manual training in carpentry.

(2) The higher preparatory stage which embraces instruction in drawing (geometrical and in light and shade) and manual training in wood and metal with elementary laboratory practice in experimental science, physics and chemistry. Its proper place is in the secondary schools for general education.

(3) The Technical stage proper is then reached where instruction in scientific principles is combined with various branches of practical work such as is met with in mills and factories or workshops.

(4) The Higher Technical stage comes next where advanced scientific training and experimental work is undertaken partly with a view to develop industries by research.

16. It will be observed that what is popularly called Industrial or Craft Education is distinct from and does not fall under any of the stages of Technical Education. It would come in after the (1) *i.e.*, Lower Preparatory Stage, and being essentially similar to workshop practice for acquiring manual dexterity stands out by itself. It is admittedly the education of the workman and does not necessarily include technical skill.

17. "A complete system of Technical Education should provide necessary instruction for different classes of persons engaged in productive industry. It is usual to divide these persons into three classes: (1) Workmen, (2) Foremen or Overseers, (3) Managers or Masters. The industry in which they are employed may be grouped under four heads: (1) those involving the use of extensive machinery, (2) those which mainly require the use of hand tools, (3) those depending on artistic skill, and (4) agriculture in all its branches."

18. In recent years there has been a considerable awakening in the country to the need of Technical and Industrial education and suggestions have been put forward for the establishment of Polytechnics, Engineering Colleges, Chemical Industrial Colleges, Agricultural Colleges, and it is remarked that the land must be studded with Industrial and Craft Schools. The examples of England, America, Germany and Japan have been freely quoted as possessing numerous colleges and schools and as affording various facilities for technical education and advanced scientific training.

It seems to be forgotten more than remembered that those countries possess a wealth of manufactures, factory and workshops which India does not possess; and that there, as it must be here also, the growth of manufactures, factories and workshops preceded the establishment of Technical Schools and Colleges. These may and are helpful in stimulating the advancement of industries and manufactures, but they cannot create them.

19. The process of advancement must necessarily be slow if it is to be fruitful of good results. The cry appears to be for hot-house culture, but no such culture will result in lasting good. The condition of the majority of industrial schools started during recent years may be cited as an illustration. They have been either failures or very defective. It is true that the matter has not yet passed the stage at which many experiments must be tried and a proportion of failures must be expected. At the same time there are certain broad lines which should govern the action to be taken in the matter.

20. The expanse of the country is too large and the characteristic features of its principal parts are too dissimilar to admit of the whole question being dealt with satisfactorily by a Central Organisation or Institute for the whole country except in its general or preparatory stages: and here there is practically little or no difference of views.

21. The need of the introduction of drawing, modelling, manual training, mathematics and elementary laboratory work in physics, chemistry and science in the primary, middle and secondary schools for general education is recognised in all Provinces and efforts must be persistently made to secure the inclusion of these subjects not as optional parts, but as essential divisions of the course of general education. The failure of many of the so-called industrial schools to produce good results may be attributed to some extent to this defect alone. In his report on Technical Education in Primary and Secondary Schools, Dr. Thomson of the Poona College of Science characterised drawing as the rock-foundation of any technical education worth the name. In England every boy attending the Board Schools takes carpentry necessarily. In his inaugural address at the Second Industrial Conference held at Calcutta, His Highness the Gaekwar laid great stress among other things on the urgent necessity of introducing manual training in all schools for general education.

22. It would appear as useful to call for a Central Technological Institute for all India as to suggest the substitution of one Central University for the different Provincial Universities. Decentralisation in a matter of this kind is certainly to be desired. Certain trades and industries are particular to certain districts and provinces, and it is best that each Province should decide the lines on which it shall provide Technical education and each district should determine the particular trades for which Trade-Industrial or Craft Schools shall be established. The demand both as regards the quality and quantity of instruction needed must be carefully considered and great care must be taken in the selection of qualified teachers and in the provision of suitable text-books and exercises for practical work. A system of industrial schools co-ordinated to the trades and industries of the Province cannot be well created except on the initiative of District Committees of men who know the wants of the community from personal knowledge and who are affiliated to a Central Provincial Committee or Board whose business it is or should be to watch the progress of the industries of the Presidency and regulate through its expert officers the education that may be needed for the advancement of those industries within its Province. It has to be recognised that industrial development in that aspect of it called Technical and Industrial Education lies outside the proper scope of the Educational Department. The smaller technical schools and industrial schools ought to be subordinated to the Central Provincial Technical Institute as the Arts Colleges are to the University.

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## PART III.

### BOMBAY PRESIDENCY.

23. The scheme of Technical Education for the Presidency of Bombay was outlined 25 years ago by the Government of Lord Reay on these broad bases and was published in G. R. no. 3 Ed., 15th September 1886.

24. In 1887 the Victoria Jubilee Technical Institute was formed with the object of imparting instruction to persons of either sex in the principle of Science and Art, and their application to industrial or other purposes, and to improve the status and position of such persons as may acquire proficiency in the said principles and their application as aforesaid by—

(1) The establishment of an institution in Bombay for the instruction of apprentices, workmen, foremen, managers, and for training suitable Technical Teachers for the whole of the Presidency.

(2) The establishment, as funds permit, of technical schools at other places than in Bombay, and the grant of assistance to such schools as may be affiliated to the Institute throughout the Presidency.

(3) The holding of examination in technology in any manner that may appear practical, and the granting of certificates of competency to those who satisfy the prescribed tests.

25. If the institute is to undertake and accomplish the extensive work the government and its founders expected of it, its present isolated position must be done away with and its deservedly prominent place in the educational system as the premier institution for technological instruction should be assigned to it and funds should be made available so that it may undertake—

(1) the developments needed in the existing departments and make the necessary additions to its scope of usefulness.

(2) the affiliation, supervision and control of the smaller Technical and Industrial schools of the Presidency.

26. Hitherto it has had to struggle on, and despite many difficulties, it has made satisfactory progress. It has added two large and two subsidiary departments, Electrical Engineering, and Chemistry and Metal Working and Motor Mechanics, besides enlarging the scope of the original schools of Mechanical Engineering and Textile Manufacture. Its equipment which was originally worth about R75,000 has now risen to nearly R2,00,000. The number of fully qualified teachers has more than doubled, about 7,000 students have been educated in its classes of whom about 900 have obtained diplomas and certificates. It has supplied trained teachers for the whole Presidency, for other Provinces as well. Its passed students have found remunerative employments in various branches of mechanical industries, their salaries ranging from R500 downwards. Some have published books in vernacular on technological subjects, some have even figured as patentees of inventions. The successes of its students in the examination held by the City and Guilds of London Institute compare very favourably with those of English candidates. It has afforded a model for other Presidencies. It has attracted and trained for several years past a large number of students from districts outside the Presidency (on an average of about 60 per cent. of those in attendance), and it is admittedly the best manned Technical Institute in the country. It had been frequently and freely appealed to for advice and guidance in the establishment of other schools in determining the curricula of those schools. It has been consulted in regard to various matters connected with the process of manufacture. It is certainly well fitted to advance the cause of technical education in the Presidency and fully qualified to exercise due supervision and control of the smaller schools in the Province. What is particularly noteworthy is that it has cost government less than the College of Science, the Grant Medical College, the Veterinary College, the School of Art or the Deccan College.

27. It is not perfect—no institution ever is. There are certain developments of its existing departments and certain additions to its scope of usefulness which are urgently called for. These may now be briefly noticed.

### Developments and Additions.

28. Plumbing and Sanitary Engineering. This is branch in which instruction is urgently needed in the great City of Bombay, and in view particularly of its rapid expansion. The health of the 1,000,000 of the inhabitants of Bombay and its suburbs may be said in a measure to depend upon the knowledge of plumbing and sanitary engineering.

Telegraphy, telephony, electrical metallurgy and higher electrical laboratory training are subjects which would add considerably to the scope of usefulness of its Electrical Department.

Calico-printing, hosiery and thread manufacture, advanced weaving, design and jacquard loom work are subjects which will bring the Textile Department up to date and will enable it to supply the need of the textile industry in departments hitherto untouched.

Sugar-refining, metallurgy, manufacture of oils, fats, paints, varnishes, bleaching, dyeing, sizing are branches of chemical industry which will justify the existence of the Chemical Department of the Institute.

Electrical transmission of power, gas-producers and engines, testing of metals and other materials and advanced work in Electrical engineering are certain to increase the utility of the Mechanical Engineering section and place it in a position to meet the demand for higher training.

Considerable addition to the books in the Library and a decent museum are adjuncts which also deserve attention.

29. The cost of these additions and developments is roughly estimated at about R2,00,000, while an addition to the recurring grant of about R55,000 for additional staff and costs of stores and contingencies will also be necessary.

30. In view of the facts stated, it may be hoped that these amounts will be made available, and the Institute will be enabled to maintain its premier position in the Presidency as the one institution which meets its progressive wants in technological instruction.

Had the 60 per cent. students of other Presidencies paid for the cost of their instruction, the Institute would have received about R45,000 (300 × 150) a year towards its annual expenses. Or had Government to bear the whole cost of the Institute they would have had to provide from Provincial Revenues an annual additional grant of about R45,000 for several years past. It is earnestly to be hoped that the appeal to Government help which is about to be made for the purposes stated will meet with the gracious support of the Education Department.

31. Before concluding this necessarily hurried report on a difficult and important subject, I should like to summarise my views and place definite proposals for consideration. They are as follows:—

## Recommendations.

I.—A Central Technological Institute for all India is neither necessary nor desirable having regard to the expanse of the country and the varied industries, conditions and requirements of its different Provinces.

II.—Each Province should be free to adopt its own system of technological instruction and to develop it on lines best suited to the requirements of the industries of its different districts.

III.—In each Province there should be a Central or Provincial Board of Technological Education who should be entrusted with the technological and industrial education of the Province subject to the supervision and control of Government.

IV.—The Board should make adequate provision from time to time for the education of the Province by—

(*a*) the establishment of a Central Institution for the instruction of Workmen, Foremen and Managers and for training Technical Teacher;

(*b*) the affiliation of smaller Technical and Industrial Schools and the establishment of feeder classes and schools with a view to secure (1) a certain standard of instruction in the prospective students of the Central Institute, and (2) a fair degree of efficiency in the general administration of the schools or classes;

(*c*) the holding of examinations and the granting of certificates in the various technologies.

V.—The Provincial Board should be provided by Government with an annual grant fixed once in three or five years after due consideration of the funds at the disposal of the Board and the requirements of the Province, to enable the Board to—

(*a*) efficiently maintain the Central Institution;

(*b*) provide grants of assistance to affiliated schools and classes;

(*c*) meet the cost of inspection and examination of such schools and classes;

(*d*) encourage the production of Vernacular Technical Literature; and to

(*e*) meet the costs of general administration.

## Bombay.

VI.—The Trustees of the Victoria Jubilee Technical Institute should be the Provincial Board for the Bombay Presidency and the Victoria Jubilee Technical Institute should be the Central Provincial Institution for the Presidency.

VII.—The Victoria Jubilee Technical Institute should be developed by—

(*a*) a suitable addition to its staff, buildings and equipment, so that it may be in a position to undertake instruction in—

1. Plumbing and Sanitary Engineering.
2. Telegraphy and Telephony.
3. Electrical Metallurgy.
4. Higher Electrical Engineering.
5. Calico-Printing.
6. Thread and Hosiery Manufacture.

7. Advanced Weaving Design.
8. Sugar refining.
9. Metallurgy.
10. Manufacture of Oils, Fats, Paints, Varnishes, Candles and Soap.
11. Dyeing, Bleaching and Sizing of Yarns and Cloths.
12. Analysis of Food and Drugs.
13. Gas Engines and Producers.
14. Testing of Metals and other Materials.
15. Electric Transmission of Power.
16. Advanced Mechanical Engineering and to provide for a Museum and Library;

(*b*) reserving for the most successful students a certain number of the following appointments on fair salaries :—

1. Uncertified Assistant Engineers on board ships.
2. Inspectors of Telegraphs in the Government and Railway Telegraph Departments.
3. Higher Assistants in the Drawing Offices of Railways and Government Departments.
4. Higher Assistants in the Workshops of Railways, the R. I. Marine, the Port Trust;

(*c*) empowering the Institute to hold Examinations for Engineers' Certificates under the Bombay Boiler Act: the Board of Engineers being appointed by Government on the recommendation of the Provincial Board.

VIII.—The Bombay Provincial Board will require during the next five years the following Annual Grants :—

| | Estimate. |
|---|---|
| For the Central Institute | 1,00,000 |
| For Grants-in-aid to affiliated schools | 25,000 |
| For inspection and examination of smaller schools | 5,000 |
| For encouragement of Vernacular Technical Literature | 5,000 |
| For Scholarships to selected workmen to study Theory at the Central Institute | 5,000 |
| For experiments in Industrial Methods, etc. | 10,000 |
| TOTAL | 1,50,000 |

A non-recurring total grant spread over the first three years of R3,00,000 ; R2,00,000 for the Central Institute and R1,00,000 for feeder schools.

IX.—The books of the central authority and of the affiliated institutions should be open to the inspection of Government and the Provincial Board should be bound to give such statistical or other information as may be required by Government from time to time. No sale of immovable property of the Provincial Board or the aided schools should be effected without the previous sanction of Government. The scheme of examinations should be approved by Government.

CONCLUSION.

I would strongly recommend the adoption of the foregoing proposals as the best in the interests of Techinical Education. I would urge their acceptance at least on trial for a stated period of five or ten years.

TOM. S. DAWSON, *Principal,*
*V. J. Technical Institute.*

BOMBAY:
*February 9th, 1911.*

## (12) *Memorandum by A. D. Pickford, Esq.*

The question of technical and industrial education has been before the Upper India Chamber of Commerce on several occasions, and with regard to the grant of state technical scholarships to enable Indian lads to proceed to countries outside India, the Chamber holds the view that the time is hardly ripe for this method of encouraging development. It is felt that there is a danger of such scholars acquiring a great deal of knowledge unsuited to Indian conditions, and it seems, therefore, to be of great importance to the success of the scheme that such scholarships should supplement a reasonably complete local training. Only

in this way will the recipients of these scholarships be in a position to avoid wasting a good deal of their energy during their special period of training.

There is also the risk that these youths will return to India with ambitions which the conditions of industrial employment as they exist at present, are not likely to satisfy. Youths in England who have completed their technical education know that the fight for success is only just beginning. They form part of large numbers of other youths learning to follow the same profession. Here the case is very different : the mere grant of a very small number of scholarships singles out the recipients from amongst their fellows, and it would be very surprising if that fact did not give them an undue sense of their own value. I only allude to this special scheme in order to emphasise the very strong opinion held by the Chamber that the facilities for technical education in the United Provinces themselves require the first attention, and it is a matter of great disappointment that the establishment of a Technological Institute in Cawnpore has not yet taken practical shape. This delay is most unfortunate. The promotion of industrial development in India or at any rate in Upper India must in any case be slow, for it is not merely a question of providing facilities for the acquirement of technical knowledge. It is a question of creating a national instinct for the management of industrial concerns, an aspect of the matter which is rather apt to be overlooked. Industrial activity in Great Britain is the result of centuries of development, and it is perhaps not too much to say that the fruit of the efforts now being made in India will only be enjoyed by posterity. It is earnestly to be hoped, therefore, that as an important part of the programme for industrial development, the scheme for the Technological College will be hurried on.

A. D. Pickford.

# MORAL AND RELIGIOUS EDUCATION.

## *(1) Points for consideration regarding moral instruction circulated to Directors of Public Instruction by the Hon'ble Mr. H. W. Orange, Director General of Education in India.*

1. Under this heading it is not proposed to discuss the benefits of good homes, or good arrangements, for boarding and lodging under proper supervision at the school, or the example of good teachers. These things are taken for granted.

Nor is it primarily intended to discuss the advantages of text-books having upon the whole a good moral tone and containing biographies of good men, as there is general agreement upon this topic.

The subject more particularly propounded for discussion is direct moral instruction.

2. I shall be much obliged if the Director of each province will furnish me with a note which will be printed and circulated amongst the members of the Conference showing in respect of (*a*) vernacular, and (*b*) anglo-vernacular schools, the extent to which the reading books in use contain direct moral instruction. Moral lessons are usually found scattered through these books, and it will be useful to the Conference to have before it information as to the subject-matter, method, and style of these lessons, and any information which the Directors may be able to give as to the interest taken in them by the teachers and by the pupils, and as to the effect which they are thought to have. In some provinces this question may be difficult to answer owing to the multiplicity of books used, especially in secondary schools, and in such cases it is not intended to ask the Directors to cause an exhaustive examination to be made of the different series of readers, but it will suffice if an account is given of the treatment of the subject in one or two of the sets of readers most widely used in the province.

Secondly, will the Directors kindly state whether in any of the schools in their province manuals of moral instruction are in use and, if so, will they furnish particulars as to the teaching therein contained and an estimate of its value?

Thirdly, will the Directors kindly say whether the Managers or teachers of any vernacular or secondary schools are in the habit of giving direct moral instruction apart from, or over and above, what may be contained in school readers; and if so, can they furnish some account of the system followed?

Fourthly, will the Directors kindly furnish a note describing the trend of public feeling in their province in the matter of direct moral instruction; the extent to which there is a desire for it either among the parents or among the teachers or among the public generally; whether this desire is felt by one class or creed more than another; whether there is any divergence of view based on creed as to the introduction of systematic moral instruction into the schools or as to the conduct of such instruction. In those provinces where there has been an important conference, *e.g.*, in Bombay, the Directors will oblige by furnishing, if they can, some account of the questions discussed at the conference, of the different points of view from which representative speakers approached the subject, and of any conclusion upon which there appeared to be general agreement.

3. It will be observed that the questions upon which the Directors are asked now kindly to note are chiefly questions of fact, and it will be of great value if they can be so good as to furnish as full information as possible under these various headings, so as to reach this office by the end of September.

4. The following question is not put universally to the Directors, but it would be useful to include, if some of the Directors could kindly furnish it, a few representative accounts of the whole system of moral instruction practised in indigenous institutions of the old type for the teaching of Sanskrit, Arabic, Pali and other classical languages and systems of knowledge, and in the monastic schools in Burma, both those of the higher kind which are intended to train up men of learning and those of the elementary kind which are intended to impart instruction to common people before they earn their living in the ordinary pursuits of the world. Doubtless these institutions derive their moral power from other sources than set lessons; but it will nevertheless be of interest to the conference to know to what extent such institutions do practise systematic moral instruction and what is the order and method of treatment pursued.

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## *(2) Note on Moral Instruction, by the Hon'ble Mr. W. H. Sharp, Director of Public Instruction, Bombay.*

1. (*a*) The extent to which the vernacular reading books in use contain direct moral instruction; the interest taken in these by teachers and pupils; and the effect supposed to be produced.

The following is a list of the lessons of a moral or religious turn contained in the vernacular readers issued by the Department.

*Book I.*

1. Advice to school children, a simple poem.
2. Cleanliness. A dirty child is described, and the necessity and advantages of cleanliness are inculcated.
3. Respect for parents and elders.
4. Account of a noble-minded and unselfish girl.
5. Boys and frogs, the fable inculcating that people should not amuse themselves at the expense of others.
6. Kindness to animals.
7. Speaking the truth : story or poem.
8. The shephered boy and the wolf (or tiger).
9. How Ramdas was beaten by a farmer and returned good for evil.
10. Charity.
11. The greatness of God : a poem.
12. Story of an avaricious farmer.

*Book II.*

1. God as the Creator, to whom we owe thanks and prayer.
2. A moral story illustrating the effects of bad company.
3. The truant : a story.
4. Story about an obstinate boy who gets stung by a scorpion.
5. A poem inculcating perseverance from the example of the spider or ant.
6. Moral courage : a boy refuses to disobey his mother and go off to play.
7. Dialogue between wasp and bee, showing that usefulness is superior to mere beauty.
8. Two clay dolls, a story against selfishness.
9. A kind-hearted boy allows a younger and poorer boy to take his own turn at the swing.
10. Blind and lame : a story inculcating sympathy and co-operation.
11. A moral story warning against pilfering.
12. The stag that was proud of his horns : fable from Æsop.
13. The jackal that tried to imitate a tiger.
14. The ox and the frogs.
15. A story illustrating the need of keeping one's clothes and person clean and tidy, and of dressing appropriately.
16. Eyes and no eyes : observant and unobservant boys.

*Book III.*

1. Resisting temptation : a boy is tempted to steal money in order to go to a fair.
2. Story about a boy who helps the maimed or lame or blind, and is kind to animals.
3. A moral story showing that no act can be concealed from God.
4. A moral poem.
5. Story of an honest merchant returning a deposit to the heir of the depositor.
6. As you sow so will you reap, story of four thieves.
7. An incident from Mahabharat showing the forgiving nature of Yudhisthira.
8. Story to show that riches do not bring health or happiness necessarily.
9. Two honest men : a version of a story from Mahabharat about the finding of a pot of gold.
10. How the blackmailing door-keeper was punished, a warning against "dasturi."
11. George Washington and the axe.
12. A legend teaching respect for one's preceptors.
13. Two children confess to their mother about some mischief they have done.
14. Lessons in forethought to be learnt from the ant.
15. Counting chickens before they are hatched.
16. Story inculcating perseverance.
17. A prayer to God : poem.
18. Two parrots : story showing the effects of training and company.
19. A story to show that self-help is the best help.
20. Draupadi explains how she secures her husband's love and respect : advice to girls.

21. Warning against loitering and wasting time.
22. A moral poem.

*Book IV.*

1. A Rajput story of devotion to the King.
2. A Rajput story showing the magnanimity and brotherly affection of a prince.
3. A story to show the solidarity of man's labour : all who work help each other.
4. Good behaviour is the best testimonial : a story.
5. The reward of honesty : a story about a boy employed in a shop.
6. Superstitious beliefs discouraged.
7. God's presence throughout nature inferred from its regularity, etc.
8. God is loving but also just : if we observe his laws we are happy.
9. Moral poem from Ramdas.
10. The boy was not afraid to do right : a school-boy who refuses to join the rest in cribbing, playing truant, etc.
11. Rajput story of a nurse who saves the infant prince by the sacrifice of her own child.
12. Fraternal love, illustrated by a Portuguese story of a shipwreck.
13. A jealous boy spoils another's drawing to prevent him from getting the prize, but is frustrated.
14. A lesson against stinginess.
15. A Rajput patriotic story.
16. Necessity of regularity and punctuality at school and in life.
17. Story teaching that we should not laugh at the defects of others.
18. Perseverance under difficulties, illustrated by Shivaji, Wilberforce, Lesseps.
19. The stomach and the members.
20. Story of Bhishma's self-sacrifice.
21. Moral poem from Tukaram.

*Book V.*

1. Manliness. A direct moral lesson on true manliness, self-control, temperance, etc.
2. Stories illustrating presence of mind.
3. Story illustrating devotion to duty.
4. Stories illustrating self-denial and self-control.
5. Religious poem from Tukaram.
6. Direct moral lesson on moderation in eating and drinking.
7. Stories illustrating the evil of procrastination.
8. Direct lesson against extravagance, including indiscriminate charity, extravagant feasts and ceremonies, etc.
9. Story of base and deceitful action being exposed and punished.
10. Stories warning against miserliness and the hoarding of wealth.
11. Stories illustrating self-reliance.
12. Lesson against spitefulness.
13. Stories illustrating cool courage.
14. Lesson on true and false benevolence.
15. The necessity and advantages of respecting the beliefs and views of others : toleration.

*Book VI.*

1. Man's duty towards God, his neighbour and himself.
2. Religious poem from Ramdas.
3. The influence of habit in the formation of character.
4. The importance of good manners : etiquette in certain cases.
5. The importance of "enterprise" and its difference from "recklessness."
6. Warning against slandering and backbiting.
7. Moral poem from Tukaram.
8. Direct lesson on gratitude.
9. Direct lesson on patience and forbearance.
10. Moral poem from Vaman.

11. Direct lesson against vindictiveness and revenge.
12. Moral poem from Moropant.

*Book VII.*

1. Duties of a good citizen.
2. Religious poem from Dnyandev.
3. The need and comfort of religion.
4. Direct lesson on hospitality.
5. Ambition good and bad.
6. Intoxicants and their evil effects.
7. Sympathy and co-operation in life: hospital, dharmashalas, charitable institutions, etc.
8. Thrift, and savings banks.
9. Religious poem from Moropant.
10. Essentials in a good man of business: illustrations of business capacity and method.
11. Religious poem from Moropant.

These Readers are published in four vernaculars, and the particular stories and poems naturally differ in many cases; I have followed the Marathi list. In addition there are several fables or bits of poetry with a moral to them which I may have overlooked. There are also numerous lessons of a biographical, hygienic, economic, or civic turn which I have not taken into account. When all the lessons dealing with historical, geographical, and scientific matters, are deducted a very large proportion of the remainder deals with matters of a moral turn direct or indirect. The interest taken in them depends entirely on the personality of the teacher; how far a pupil's ultimate character is influenced it appears impossible to say. The following is from an Indian Deputy Inspector:—

"Most of the prose lessons on morality are descriptive, some are in the shape of dialogues, some are in dramatic form. The matter of these lessons is generally good but the method of their treatment is not always happy. Poetry lessons are generally found difficult by the teachers as well as the taught, on account of their high language and sublime ideas. Poetry lessons are often neglected or perfunctorily taught, while prose lessons hardly receive due attention at the hands of the teachers, most of whom pass them off as mere reading lessons. The majority of our teachers are mediocrities in point of morals and general culture and hence their personal example does not go far to illustrate and sanctify the efficacy of their precepts to the young minds, who learn more by example than by precept Want of proper home training and the jarring notes of social surroundings often counteract the influence of what moral teaching is imparted in schools."

Though the character of teachers is excluded by Mr. Orange's memorandum, it is impossible to get away from the fact that a large proportion of Indian teachers are wanting in a high degree of conscientiousness, in a feeling of moral responsibility, and in an understanding of the meaning and value of discipline.

I. (*b*) The same as regards the books read in Anglo-Vernacular schools.

The multiplicity of these books is very great; in the 7th Standards of less than 20 Government high schools I find at least 24 different text-books in use. Excluding ordinary tales, selections of poetry, etc., the number of "Readers" in use is also great; the above schools are using amongst them Nelson's Readers, Nelson's Literature Readers, Longman's Ship Readers, Barrow's Readers, Orient Readers, New Orient Readers, Sirkar's Readers, Royal Readers, Royal Crown Readers, King Alfred Readers, King Readers, Royal Prince Readers, and Nesfield Readers. Most of these are well known and contain a large proportion of moral lessons. As to the interest taken and the effect produced the answer must be the same as before; the interest taken at the moment depends on the personality of the teacher, and as to the ultimate effect produced no one can say much. College students are generally able to reel off a goodly number of moral maxims and moral illustrations with which their own conduct may or may not conform. It is probable that some good is being done in the Government and Mission high schools, in which a reasonable amount of discipline is enforced in addition to moral teaching; but very little in most of the private schools which rarely have competent teachers.

II. Are any manuals of moral instruction in use?

Todd's Student's Manual is used in some places, and is said to be popular with boys and masters; it seems to me long-winded, and unnecessarily fanatical as when the habits of a smoker are compared to those of swine. Gould's series of moral lessons is popular in one large school; Dr. Murdoch's Indian Students' Manual is well spoken of. A "Courtesy Reader" by Norton is used as a supplementary reader, and is liked. Some teachers use Waldegrave's Handbook of Moral Lessons, as a guide. Some Hindu schools combine moral with religious instruction, utilising Mrs. Annie Besant's books or others emanating from Benares. Better than any formal manual in my opinion is "Common Thoughts on Serious Subjects" by the late Mr. Chester Macnaghten of Rajkot.

III. Do the managers or teachers of any vernacular or secondary schools give direct moral instruction apart from, or over and above what may be contained in school readers?

At the Nutan Marathi Vidyalaya of Poona lectures are given and texts affixed prominently to the walls; the boys however are accused of having stoned a visiting cricket team which had just defeated them, so that effect of the texts remains doubtful. At some of the Parsi schools in Bombay religious and moral instruction is regularly given. The same is done at the Aryan High School. At the Gokaldas High School a catechism of the Hindu religion is used up to Standard III; then the Ramayana and Mahabharat are laid under requisition; and at the top of the school the Central Hindu College manuals are used. At Christian and Mahomedan schools moral and religious instructions are usually combined. The Educational Inspector of the Central Division is of opinion that where schools are homogeneous, religious and moral teaching can be profitably combined; but that elsewhere the teaching of morals, apart from the personality of teacher, is ineffective.

At the Dharwar High School (Government), a teacher has informal talks with the senior boys after school hours on matters of religion and morality, avoiding controversial topics; Mohomedans and Lingayates are free to attend as well as Brahmins. At Ratnagiri a teacher residing in the school hostel did something of the kind once a week; but the headmaster drove him away because he wore a shirt at his meals, and was therefore adjudged unorthodox. At the Godhra High School (Government) one moral lesson a week is given in the 6th and 7th Standards.

In the municipal vernacular schools of the city of Surat moral instruction is imparted for one hour daily out of school-hours by one of the teachers. A retired Sub-Judge pays the teachers employed and supplies manuals of moral instruction to the pupils. These manuals are:—

*For Boys*—

1. Sanatan Dharma Samvad.
2. Sanatan Dharma Granthavali.
3. Shri Ramchandra.
4. Mahabbarat-no-Sara (Central Hindu College).
5. Nitini Shikaman by C. B. Modi.
6. Vidur Niti (Gujarati Press).
7. Guru Dorshan by M. N. Dishi.
8. Dharma Niti Bodhini by B. L. Desai.

*For Girls*—

1. Sati Mandal, by K. V. Trivedi.
2. Niti Ratna Mala by H. B. Hora.

To illustrate the character of these books it may be observed that "Dharma Niti Bodhini" Part I, treats in a very simple narrative style of such subjects serving one's parents, keeping one's word, serving one's teacher, brotherly affection, a wife's duty to her husband, carrying out a father's promises, truthfulness, consequences of gambling, hospitality, righteous and unrighteous conduct, undeserving greatness, doing good to others, anger and forbearance, returning good for evil, loyalty.

IV. What is the trend of public feeling in this province in the matter of direct moral instruction? To what extent is there a desire for it either among the parents or among the teachers or among tho public generally? Is this desire felt by one class or creed more than another? Is there any divergence of view based on creed as to the introduction of systematic moral instruction in the schools, or as to the conduct of such instruction?

There is a pretty general demand for direct moral instruction, but in most cases it is associated with the idea of religous instruction, and in some cases people mean by "moral instruction" only instruction in their own religious dogmas. People are also rather vague as to what comes under the head of religion or morality. I remember a Brahmin student telling me once that he had been devoting much attention to religion, which proved to mean "breathing exercises."

A conference on the subject of moral instruction was held in Bombay last April. In his opening address His Excellency the Governor expressed the opinion that it was impossible to arrange for religious teaching in Government schools in India; but that a teacher who had the necessary gifts and enthusiasm for moral teaching might be assisted by laying down definite lines for his guidance, and by providing time in school hours for his purpose; that the former object might be attained by providing books of moral lessons, in which the atmosphere, colouring, and forms of expression should be Indian: and that even a leaven of moral training imparted during the school period would in time work with increasing effect upon home life, since the children of to-day are the parents of to-morrow. The Bishop of Bombay urged that religion is the basis of morality, and illustrated how a Christian teacher would base his moral teaching on his religion. Mr. Tribhuvandas Nathubhoy took a similar line with regard to Hindu teaching and Hindu religion. Lady Muir Mackenzie, however, wished to base all moral teaching on the education of the heart, on the desire to love and serve one's fellows; whilst Principal Paranjpe of the Fergusson College argued for a secular basis for moral teaching, on the ground that in making morality depend upon religion we run the grave

risk of loosening the moral ties if the religious sanction comes to be no longer regarded as binding. "In times like ours where landmarks that were but yesterday regarded as perennial are being removed to-day and are likely to be forgotten to-morrow, it is best not to cling to too many rocks. The one solid rock on which we can rest is our own reason. If eating pork is a heinous sin with one set of people, beef with another, and any meat at all with a third, how can the alleged basis of morality be regarded as absolute! Especially when as in India there are various religions, each religion divided into innumerable sects, and each sect divided into many separate sections; when the feeling aroused by any religious question is of a pitch which can hardly be conceived in Western countries; when the respectability of a man is in inverse ratio to the number of people he is able to associate with without coming into conflict with the prevailing religious ideas; it will be seen that the less we have to do with religion in moulding the character of young children the better for our national being. Let boys be taught to see that there are some principles which they can all believe irrespective of the fact that they belong to one religion or several. It is only in this way that our various races can be brought closer together." The Reverend A. Seither, S.J. quoted the example of France to show that the secularist solution was contradictory in principle and inefficacious in action.

Passing from the basis of moral teaching the need for definite moral instruction was emphasised by Mr. H. J. Bhabha, who quoted from the example of Mysore where he was lately Director of Public Instruction. Mr. M. K. Patel, a Bombay teacher, was of opinion that moral text books prove exceedingly dull and monotonous, that moral teaching should centre round great and attractive personal types, and that the system of indirect instruction, by means of ordinary lessons on ordinary subjects, was the only one recommended by experience "despite the rantings of inexperienced enthusiasts." The Reverend E. L. King of the Mission High School, Belgaum, also thought that far more moral meaning could be brought into our curricula by an understanding of moral significance of each and every study than would result from a regular study from a set text-book. Mr. Wren of the Secondary Training College dwelt on the all-importance of the teacher. "You can only get at the boy through the teacher and why consider the ammunition if the gun is inaccurate?" Mr. D. G. Dalvi, M.A., L.L. B. was of opinion that moral education must be secular in basis, and indirect in method, at least in the secondary and higher grades; but also recommended the collection of moral verses and stories from Sanskrit and vernacular literature. Finally, Mr. D. G. Padhye of the Gokaldas Tajpal High School, in which Hindu religious teaching is systematically given, stated that such instruction alone was not found sufficient to mould the characters of the boys, and that therefore systematic eithical instruction was necessary also; and that the direct method with special text-books was indispensable in view of the low calibre of many Indian teachers who are not equal to utilising the indirect method solely. The remainder of the session of the Conference was devoted to civic and sanitary instruction.

On a show of hands being taken the great majority of those present were in favour of special books being provided as a guide to teachers, but against their being put into the hands of the pupils; as to definite hours being provided for moral lessons opinions seemed almost equally divided.

V. Is any moral instruction given in indigenous Sanskrit or Arabic schools?

It is stated that the Sanskrit schools of the Central Division give purely secular instruction. Koran schools confine themselves to the learning of the Koran by rote; but in schools where Arabic is studied as a language most of the books and subjects taught are more or less bound up with the moral system of Islam. Here also a great deal is said to depend on the personality of the teacher.

In the Northern Division also but little moral instruction is given in such institutions, beyond the sing-song repetition of pithy sentences. In Surat however there is a Sanskrit school for which a code of morals has been drawn up; the guru sees that the pupils observe it both in and out of school, and punishes any breach severely. The pupils also read such manuals as *Vidurniti* and *Nitishatak* by Bhartrihari, and commit their maxims to memory.

W. H. Sharp,
*Director of Public Instruction, Bombay.*

Poona;
*22nd September 1910.*

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## (3) *Note on Moral Instruction by the Hon'ble Mr. G. W. Kuchler, Director of Public Instruction, Bengal.*

*Paragraph 2 of Mr. Orange's note—First heading.*—Under the old scheme of vernacular instruction which is now in process of being superseded by the new syllabuses introduced in the Government resolutions of 10th June 1907, and of 20th April 1909, very little provision was made for the inclusion of moral teaching in the prescribed readers. Up to Standard II such inclusion was indeed rendered impossible by the fact that children were expected to learn their mother-tongue through the medium of science readers, with the native idea of teaching them both science and reading at the same time. With regard to the vernacular readers for

Standards III—VI it was laid down that they should contain some anecdotes with a moral tendency, but the compliance on the part of the compilers of such readers with very vague instruction thus conveyed was slight and irregular and cannot be said to have produced any practical or beneficial results.

In Bihar, however, owing to the comparatively limited amount of suitable Hindi literature there was a larger inclusion of writings with a moral tendency, the Ramayana and Mahabharath being chiefly drawn on for the purpose of selections for the various readers. These indirectly inculcate the virtue of obedience to parents, superiors and the King; duty to equals and inferiors; piety, truthfulness, charity, altruism, gratitude, consideration for others; self-sacrifice, public spirit; submission to authority, moderation, etc.

The introduction to the new syllabuses for vernacular schools takes up the question of moral training and lays down lines on which such instruction so far as it can be conveyed in readers should proceed. Following these instructions the lower primary readers provide a certain amount of moral instruction in the form of little poems embodying moral maxims, anecdotes illustrating the chief virtues and biographical and character sketches of good and great men, etc.

The readers for standards III to VI on the contrary are definitely required to include among other subjects—

(a) character sketches from Indian History illustrative of such virtues as honesty, fidelity, etc., (b) moral tales and (c) poems illustrative of the virtues of truth, honesty, self-sacrifice, obedience, etc. How far authors have carried out these instructions, it is as yet impossible to tell, as the books submitted to the Text Book Committee have not yet been examined. No provision is made for moral teaching in the English readers, nor is this necessary, as instruction in the vernacular is compulsory for all pupils in every class of schools up to Standard VI, *i.e.*, up to the age of 12 on the average. In the high school stage, *i.e.*, for the age of 12 to 16, instruction is in English and much greater latitude of selection in the matter of readers is allowed. For the two lower classes the choice is left respectively to the Inspector of Schools for Government Schools and to managers in the case of aided schools, the only condition being that the books must be on the approved list of the Text Book Committee, while for the two upper classes, the University prescribes the text books, a very wide selection being given in the case of English. No conditions are laid down as to moral instruction, and whether the teaching conveyed by the literary readers has in any respect a moral tendency is consequently a matter of mere chance.

2. Manuals of pure moral instruction for use in either indigenous or ordinary secular schools can hardly be said to exist. Moral instruction has always been blended with religion in Bengal, and although many of the books in use contain teachings of a purely moral character the religious background is always present. This will be seen more clearly from a perusal of the next paragraph.

3. In the following remarks with regard to moral teaching generally, I have confined myself to ordinary secular schools following the departmental syllabuses, and this is I presume the intention of the Director General. Indigenous schools for Hindus and Muhammadans are dealt with separately in paragraphs 5 and 6. While the great majority of our secondary schools strictly adhere to departmental syllabuses and the University courses to the exclusion of direct moral instruction, some, however, very few in number appear to have taken steps to include moral and religious instruction as part of the every day routine, *e.g.*, the two unaided schools, the Ariya Mission Institution and Sri Krishna Pathsala in Calcutta. Primarily started as a set-off against schools of Missionary enterprise, these schools provide for the teaching of Hindu Dharma on broad and general lines acceptable to different sects and castes. Generally the Baghabat Gita—an eclectic synopsis reconciling different systems of Hindu Phoilosophy and Religion—is taught as a class book in the higher classes, while short booklets, containing the Slokas of Chanakya, moral maxims, hymns—all in simple Sanskrit verse with metrical translations in the venacular—form part of the courses in the lower forms. Some schools (*e. g.*, the Pingla aided High English School in Midnapur) again have adopted text books on Hinduism, prepared and prescribed by the Central Hindu College, Benares. In some again no particular text-book is taught, but boys called together for the purpose—either before the classes begin their day's work or after the daily programme has been gone through—are taught to recite prayers, hymns, moral poems, Sanskrit slokas. In Missionary schools the Bible or chapters from the Testament form part of the curricula.

In the ordinary primary and middle vernacular schools religion of direct moral instruction no longer forms part of the class work. In some pathsalas, it is true, of the old type, the traditional moral teaching referred to in paragraph 5 has been kept up but their number is small and fast diminishing. Boys are there taught to recite hymns and verses either composed by the Guru or adopted from standard works, and Pujas (worship of the Hindu Goddess of Learning) are celebrated in the school premises, the boys subscribing to and participating in them.

In Maktabs, religion forms part of the instruction and the boys are taught to recite the five appointed prayers and to perform other religious duties. The Persian and Urdu readers which are prescribed, contain, moreover, a considerable number of moral lessons. Maktabs

have now been entirely reorganised and the secular education there given has been brought into line with that which is imparted in ordinary lower primary schools. They may therefore be taken as examples of schools recognised by Government in which an organised system of religious instruction goes hand in hand with secular education.

As regards the manuals which are in use it has already been pointed out that though including moral teaching, they are essentially of a religious character. Hindus of all classes irrespective of castes or sects revere the Bhagbat Gita as part of the Vedanta and revealed religion. The text-books on Hinduism prepared by the Benares Central Hindu College are excellent manuals, in which an attempt has been made to explain according to modern ideas, the fundamental principles of Hinduism, and to exhibit the ethical import of the Sashtric commandments and observances. Again there are compilations based on Sanhitas (particularly the Laws of Manu) and including Puranic stories. These books (none of them are of a sectarian type) embody precepts and lessons alike applicable to the whole Hindu community. Chanyaka's slokas, Niti-Satakam, Santi-Satakam, Maha Mutgor of Sri Sankara-charya are all classics containing moral aphorisms which have been described as counsels for "seekers after Good". Hymns and invocations to the Deities are from standard books, Tantras, compositions of the Sages.

Where the Bhagbat Gita or text-books are taught, provision exists for weekly lessons, one hour or 2 half-hours sufficing. Prayers and hymns on the other hand are recited and sung every day before the classes begin or after the ordinary work of the day is finished and at the end of a recitation there is often a moral discourse by the Head Pandit. Care is taken to select books or hymns which would appeal to all Hindus irrespective of caste or creed distinctions, emphasis being laid on doctrines and ideals acceptable to all alike.

4. The trend of public opinion is undoubtedly towards the revival of some form of moral teaching. The almost universal opinion, however, is that this teaching should have a religious sanction. There is a strong feeling amongst parents and teachers of whatever creed or caste that the divorce of education and religion, contrary as it is to the whole of Indian tradition, whether Hindu or Muhammadan, has not been for the good of the youth of the country and has resulted in a large measure of moral degeneration. There is no doubt that the solution most acceptable to the various classes of the community would be that boys should receive moral teaching on the religious basis from teachers of their own creed; in other words that Hindus should be taught by Hindus and Muhammadans by Muhammadans. At the same time, though the public mind in Bengal is not ripe for the idea of moral instruction totally severed from religion, and in fact can hardly be said to have grasped the meaning of such a system, I am not sure that, with the strong antipathy that exists against the purely secular education now given in schools, a scheme of direct moral instruction, even though it were unconnected with religion, would not be welcome as a great improvement on the existing practice. The conclusions stated above have been arrived at after a full consideration of the views of the educated community as elicited by extended enquiries from representative members, and as indicated by public expressions of opinion in the press or in representation to Government on the subject.

5. The following account of the system of moral instruction followed in indigenous institutions of the old type for the teaching of Sanskrit forms the substance of a note on the subject from M. M. Hara Prasad Sastri :—

"The old type of education prevalent in Bengal was intensely religious from its very commencement. The admission to the school was a religious ceremony called Hate Khadi. Every morning the student had to repeat a prayer to the goddess of learning and also a few moral tales in verse before he commenced his daily lessons. The books taught were intensely religious. The story of Ramayana in the vernacular was read very early in life and this was enough to form a character for honesty, ability and good manners. No text books on morality were used, but the Guru of the Pathsala as well as the guardians at home always took care early in life to make the boys learn by rote about hundred verses in Sanskrit known as Chanakya's slokas, and no opportunity was missed to impress upon the boys the truth of the maxims contained in these slokas. So these slokas form the sole text book (though books were not used and the teaching was entirely oral) on moral training for all classes of men.

"This was the state of things in the indigenous primary schools called Pathsalas. When a Brahmin boy entered a tol or an indigenous Sanskrit College, he had to pass through another disciplinary religious ceremony, had to be kept away from all company and away from sunshine, learning his daily prayers by rote for several days. This finished he went to a tol pandit to learn Sanskrit grammar. In these tols religious observances were strictly supervised. There was no moral training in Grammar, but there was a good deal in the poems they read either along with or after the finishing of Grammar. At this stage also all the pupils read portions of Mahabharata, the stories of Nala and Damayanti, Srivatsa and Chinta, Savitri and Satyavan and of Harish Chandra, Karna and so on stories giving living pictures of the effect of high moral principles of universal applicability. They then had to read a portion of Smriti (mistranslated Hindu Law) giving minute regulations for the conduct of a good man, moral and religious.

"Moral teaching from the above account would appear to be purely religious. The only text book used is the Chanakya's slokas, a work with very little of the sectarian element which all people with any pretensions to gentility used to learn by rote and apply practically to all

affairs of life. Moral training however was afforded more by religious discipline, example, strict supervision, reading of good books than by means of didactic lessons.

"There is no want of works or morals in Sanskrit. One of them 'Nitimanjuri,' by Dyadiveda written about 1550 A.D., derives all his maxims of good conduct and of practical good sense from Rigveda which he very deeply studied. But Hindus during the later centuries of the Christian Era seemed to have avoided direct moral teaching as apart from religious, social and domestic discipline."

6. As to the moral teaching of Muhammadan students, the following note gives a brief account of the system obtaining in the indigenous institution of that community :—

"Religious instruction forms an integral portion of the education of a Muhammadan. It is always of primary importance in his training. His very first lessons even cannot be disconnected from religion, and hence the principal feature of all classes of indigenous Muhammadan schools, old or new, is that they cannot be completely divested of their religious character. As at present indigenous institutions of the old type for the teaching of Arabic are divided into two classes :—*viz.*, (1) Maktabs and (2) Madrasas.

"Though there is no special provision for imparting moral instruction in these institutions most of the text-books in use afford opportunity for religious teaching and are full of moral precepts conveyed by means of admonitions as well as anecdotes.

"Maktabs as I have already pointed belong now more properly to the class of secular schools and have been discussed under that head.

"In the Madrasas, among other subjects of Arabic learning, the student is taught *Fiqh* (Muhammadan Law) which afford rules of guidance for a Muhammadan in every sphere and walk of life. In the higher stages he is taught *Aqaid* (Theology), *Hadis* (Traditions of the Prophet) and *Tafsir* (Commentaries on the Qoran) all of which directly or indirectly convey moral teaching. Again the books on Ethics taught in the intermediate and higher forms of the Madrasa are an important element in the course of moral instruction, which Muhammadan students have to go through but throughout the whole teaching the religious basis is always strongly in evidence."

G. W. Küchler,
*Director of Public Instruction, Bengal.*

*The 4th October 1910.*

## (4) *Note on Moral Instruction by the Hon'ble Mr. C. F. dela Fosse, Director of Public Instruction, United Provinces.*

A list of moral lessons contained in the vernacular readers in general use in the United Provinces is attached. As these readers are used in both English and vernacular schools in the upper and lower primary standards, I do not propose to furnish also lists of the moral lessons contained in English readers approved for use in schools. English readers by well-known firms, such as Macmillan and Longmans, contain, of course, plenty of lessons with a direct moral purpose, but the members of the Conference must already be perfectly familiar with the method and style of and kind of matter included in such readers, and to enter into details would therefore serve no useful purpose.

In the lower primary vernacular reader an attempt has been made to convey moral lessons through simple stories suitable for little children. There are no poetical pieces. These were deliberately excluded on linguistic grounds ; but a committee on Rural Education which is now sitting wishes to see poetry re-introduced on the ground that it is one of the best media for inculcating morality. Pieces learnt by heart in childhood are often carried in the memory through life. Poetry in the common language of Hindustani-speaking people being mere doggrel, the committee would insist on Hindi poetry for Hindi-reading scholars and Urdu poetry for Urdu-reading scholars. The fact that all such poetry is rather difficult is a drawback, but pieces can, it is believed, be selected which are not beyond the comprehension of primary scholars. With this view I am in hearty agreement. I can well remember that it was common some years ago to find moral precepts called from Tulsi Das's Ramayan current among Hindi-speaking people, and I believe that they had often been learnt at school and treasured in the memory for their intrinsic worth and applicability to life. The exclusion of poetry from the lower primary reader was not popular although meant in the interest of scholars.

As to the value which moral lessons in readers 'are thought to have' in the United Provinces I cannot generalize with certainty, but I must confess myself to be sceptic. I doubt very much from what I have seen and heard whether the lessons in the readers of a moral tendency or with a direct moral purpose are read otherwise than as reading lessons. All depends upon the teacher, and as is well known the men employed in primary classes are poorly paid and poorly educated. It would be too much to expect such men to exert a strong moral force, and as a matter of fact with scarcely an exception they do not. Their conception of the teacher's functions does not as a rule include the teaching of morality. The school-day is spent in ordinary secular instruction and when it is over their scholars disperse to their homes and they dismiss them, if they can, from their minds. In the higher classes the pressure of examinations usually banishes all thought of moral teaching. Mission schools make a half-hearted effort to impart it daily during the brief period of religious instruction, but very little

result is probably produced. I can of course only speak from my own experience, and others—especially newspaper writers—hold, I know, quite opposite views. Despite the hugeness of the output lately of reports, essays and addresses on moral instructions, I remain of opinion that the best moral influence in schools is the steady and continuous exaction of careful work from scholars by a conscientious teacher. Frankly, I don't believe in moral lessons as such, though I do believe that a fine thought well expressed may sink into the mind as a maxim of life, if the scholar is made to study its meaning closely under a capable and high-minded teacher. Indirectly there is much moral instructions proceeding in this way, but it is the result of the scholar's own unconscious effort directed mainly to another end.

There is never likely to be agreement as to the value of moral instruction, and it is quite impossible for any one but the teacher to estimate its effect, and for him even it is very difficult. What value it is thought to have in the United Provinces seems small, for parents are generally indifferent on the subject. Perhaps they find it hard to envisage a school as a sort of moral dispensary. It is almost impossible to discuss the subject without descending into platitudes: and as an ounce of practice is worth a ton of theory, I will now allow those who in these Provinces have some actual experience to speak for themselves.

First, Mr. Arundale, the Principal of the Central Hindu College, shall have his say. He writes on this subject as follows :—

"With reference to your no. G.-2444, dated 27th July 1910, *re* moral instruction in this institution, I have the honour to inform you that from the very beginning the authorities of the Central Hindu College have placed such instruction in the forefront of their educational programme. We do not seek to draw any distinction between moral and religious education, believing the basic principles of Hinduism as of all religions contain all that is needful for the development of those entrusted to our care. For this reason these principles were sought to be gathered within a convenient compass after having been thoroughly tested by the representative of the reading religious committees. The result has been the publication of the Sanatana Dharma series of Text-Book of religion and in morality, which have found a wide acceptance throughout India and are in use in a large number of schools. Recognising, however, that principles are of no value unless put into practice and shown by example, it has been the care of the authorities to endeavour to secure as teachers and professors, men and women, who recognise the solemn character of the trust confided to them, who try to live up to the ideals whose virtues they preach in the class-room.

"We ask teachers and students alike to live in their daily life those great truths which they hear in the course of their studies. While it is our practice to set apart several periods in a week for definite religious instruction, we are fully conscious of the fact that the whole tone of the institution must be as high as we can make it, and so members of our staff take every opportunity of keeping the students' minds fixed on the essential of life by making of every portion of the day whether in class or in the play-ground or elsewhere an opportunity for showing the necessity of a life of purity at all times.

"By means of constant association between students and staff the latter are able to acquire an influence over their young charges, which acts as a powerful stimulus in the right direction. Whatever the mistakes the students may make, however, wrong they may go, this trust and confidence enable them to go fearlessly to their teacher and to pour out their hearts to him, and in this way such guidance is possible and many evil habits which otherwise would remain concealed are brought to light and eradicated without ruining the student's future career.

"I may point out that it is of the highest importance that present-day teachers should be willing to listen patiently even to the wildest talk—political or otherwise—in which their students may like to indulge instead of at once proceeding to violent disciplinary measures. Gradually by understanding the nature and the working of the minds of the youths the teacher will see how to tone down extravagance and to create an objective for youthful enthusiasm. Sympathy and patience must mark the teacher's attitude at all times."

* * * * *

Next Moulvi Shibli Nomani, the distinguished oriental scholar and Secretary of the Darul-Ulum, Lucknow, shall speak for old-fashioned Muhammadans. He says :—

"In the Arabic institutions of the old type no separate course of morality is fixed, but the following are the sources through which such an education is imparted :—

"(1) The first thing to be noted on morality in the old education is respect and obedience towards Ustads (Teachers). The connection between the Ustads and the students is not merely limited within the precincts of schools, but extends further, so much so that the student as far as possible is under the guidance of the teacher. The well-known motto of Asia is "The severity of a teacher is better than the love of parents." On account of the influence which a teacher has over his students the latter naturally adopt the good manners of the former, and so Ustads inherit the thoughts of respect and obedience towards the Government, parents and elders, it is quite natural that those whom they teach should be effected by these thoughts.

"(2) Kuran and Hadis (precepts, sayings and actions of the prophet Mahomed) contain many theories on morality and these are generally in the course of Arabic institutions; Nadwa College too is no exception. The prescribed books on the subject are Koran with commentary,

many authenticated books of Hadis and a selection in which those verses of Koran relating to the beliefs, morality and commandments are compiled.

'Himasa,' a book of literature in which there is a separate chapter on morality, is also prescribed in the course of the institution. Besides the Secretary of the Darul-Ulum occasionally delivers lectures on morality and religion."

His own eloquence, for he has a quite extraordinary gift of swaying an audience, is probably the most effective instrument in the Darul-Ulum for the inculcation of religion and morality as understood by old world Islamites.

For the M. A. O. College, Aligarh, which represents latter-day Muhammadanism, Mr. Towle, the present principal, speaks as follows :—

"At the M. A. O. College, religious instruction and training are given as follows :—

"In the school the classes have three lessons in Muslim Theology per week and attendance at the daily prayers is compulsory. In the college religious lectures are given by Sunni and Shia Maulvis and occasional lectures by distinguished maulvis from other places. Prayers are compulsory here also. The whole college and school meet on Fridays in the mosque for Juma prayers and sermon by the College Dean.

"As regards moral instruction apart from religion; this we inculcate by lectures to the whole college (not less than two each session) by the Principal and at times by the Honorary Secretary.

"The whole system of the collegiate life is based on the idea of giving a moral as well as a mental training. The tutors supervise the morals of the students on their sides.

"There has been a good deal of discussion in Aligarh as to the possibility of giving moral training apart from Islamic religious precepts. But we have not got any farther than (*a*) academic discussion of moral non-religious instruction; (*b*) the actual stiffening up of Islamic religious discipline and the attempt to follow out its moral teachings.

"The whole question is very difficult. Personally I am inclined to doubt whether it would be wise at Aligarh to attempt a separation between religion and morals."

For Sanskrit schools and colleges no one is better qualified to speak than Mr. Venis, and this is what he says :—

"The indigenous and old-fashioned pathsalas of these Provinces, as far as I am aware do not 'practice systematic moral instruction.' That, unless I misunderstand, a teacher of the old school would hardly consider a part of his special function. For while he regards every sastra and all learning as moral, except that which is obviously *immoral*, he is content with the fact that the home is for young persons the true centre of religious sanctions, reinforced as these are in the case of our Hindu friends by a well defined social system."

In regard to Arabic and Persian schools generally it may be said that there are no arrangements for special moral instruction. The maulvis of these schools are men who have a reputation for learning and piety, which is usually well deserved; and as example is better than precept, the sanctity of their lives has a marked effect upon their pupils. There are no doubt amongst them many sanctimonious *namazis* with a narrow and bigotted outlook, but public opinion which does not disapprove of their affectation of sanctity would not tolerate evil living among them and they generally lead simple and religious lives. The most noteworthy institutions of this kind is the Arabic School, Deoband.

The Manager of the Gurukul, Hardwar, an institution mainly for the training of ascetics writes at great length about his institution and has sent a printed prospectus, the introduction, to which gives an account of the purpose with which the institution was founded. The rules laid down in the sacred texts for *Brahmacharis* are observed as strictly as it is possible to observe them in these degenerate days. "*Brahmachariyas* is a word," he says, "that shuts up a world of pure and sacred association in a nut-shell. It means rigid discipline and extreme simplicity." The students have to live a life of poverty, humility and celibacy till they are at least 25 years of age.

On holidays or whenever opportunity offers lectures are given by members of the staff, bearing upon the daily conduct of the students: defects are pointed out and suggestions for their removal given.

Stories of great men (ancient and modern) are told to the students under 13 as part of their history course. Two periods a week are given to direct instruction in Dharma. "Students write essays on moral subjects, and moral lessons are based on the Sanskrit and English Readers."

"Students are allowed to hold meetings to express their views on certain events as they happen, such as the Hyderabad flood, the deaths of eminent men, the departure of masters."

Religious festivals are celebrated with much enthusiasm.

The efforts of Christian missions to inculcate religion and morality in their schools need not here be discussed; but a distinguished American scholar, Dr. Burton of Chicago, who made a tour through India two years ago to enquire into the working of missionary educational institutions has warned the missionaries that in their haste to increase the numbers reading in their schools and colleges they are mistaking the shadow for the substance. They cannot hope to

influence scholars who are too numerous to be taught and are herded in unsuitable surroundings.

The attempts made by private persons or religious bodies to take advantage of the permission to arrange for courses of religious and moral instruction in Government schools must be pronounced as complete failures without exception. The fact is the ordinary parent does not believe that either religion or morality can be administered in doses after this fashion.

The hope of the future seems to lie not in moral text-books but in the improvement of the institutions for the training of teachers. There the man who means to enter the profession should have his eyes opened to the high seriousness of the task he is undertaking as an educator of youth, so that a young, enthusiastic and impressionable teacher may acquire ideals of duty which will sustain him though the trials and disappointments inevitable to his career. Training institutions should therefore lay particular stress upon the moral aspects of the teacher's work.

One word in conclusion : there is a tendency to confound disloyalty with immorality—even Mr. Chirol has not escaped entirely from this confusion of thought. No doubt a disloyal and discontented teacher is a potent force for harm, but the remedy does not lie in requiring such a man to give moral instruction. It is my experience during the last few years that it is the low-paid and poorly educated teacher who generally falls a victim to the machinations of the agitator. Both on moral and political grounds we ought to pay more uniform rates of salaries throughout to the teaching staff instead of paying barely a living wage to the teachers of lower classes. Only thus we can hope to attract better men to the profession and attach them to the Government and to the school in which they are serving.

C. F. de la Fosse,

*Director of Public Instruction, United Provinces.*

*List of moral lessons contained in the Vernacular Readers in general list in the United Provinces.*

| Name of book. | Lessons. | Reference to pages. | Number of pages covered by the lesson. | REMARKS. |
|---|---|---|---|---|
| | | | Pages. | |
| Lower Primary Science Reader, Book I, Part I. (Pages 114) . Urdu (Pages 82) . Hindi | 4. Vanity Punished . . | 5—6 | 2 | |
| | 8. Patience Rewarded, I . | 11—12 | 1 | |
| | 9. Patience Rewarded, II . | 12—13 | 1¼ | |
| | 13. The Broken Promise, I . | 20—21 | 1 | |
| | 14. The Broken Promise, II . | 21—22 | 1 | |
| | 19. All work is useful . | 29—30 | 1 | |
| | 24. The Necklace of Truth, I | 39—40 | 1½ | |
| | 25. The Necklace of Truth, II | 40—42 | 1½ | |
| | 28. The Sun and the Wind . | 47—49 | 1½ | Shows that soft manners ca do what harsh manners cannot. |
| | 31. Pride has a fall . . | 54—55 | 1½ | |
| | 33. The Lion and the Mouse . | 57—59 | 2 | Shows how a small mouse held in contempt by a great lion saved the latter's life. |
| | 36. The Crow in Stolen Feathers. | 64—66 | 2½ | Shows that one who pretends to be what he is really not has to repent in the end. |
| | 37. The Idle Boy . . | 67—69 | 2¼ | |
| | 38. The Cunning Monkey . | 69—71 | 2½ | Contains the advice that quarrels amongst ourselves should be settled mutually and not referred to a third party. |
| | 42. The Town Mouse and the Country Mouse, I. | 78—80 | 2 | Shows that a peaceful life spent in ordinary circumstances is to be preferred to one full of risks though spent in all its gaieties. |
| | 43. The Town Mouse and the Country Mouse, II. | 80—82 | 2 | |
| | 44. The Bulls and the Tiger | 82—84 | 2 | Shows the disadvantages of disunion. |
| | 47. You cannot please everybody. | 88 -90 | 2 | |
| | 48. The King and the Bhishti. | 90—92 | 2 | Shows that it is useless to aspire too high. |
| | 54. The Cruel Grass-cutter . | 103—106 | 3 | Advocates kindness to animals. |
| | Total . | ... | 35½ | Pages out of 114 in the book. |
| Lower Primary Science Reader, Book I, Part II. Urdu (pages 130). Hindi (pages 94). | 1. The Grateful Swan, I . | 1—2 | 1 | Gratitude rewarded. |
| | 2. The Grateful Swan, II . | 2—4 | 2 | Gratitude rewarded. |
| | 4. Nothing is more precious than knowledge. | 6—9 | 3 | |
| | 5. The Tortoise and the Hare. | 10—12 | 2½ | Slow and steady wins the race. |
| | 8. The Foolish King and the Fakir, I. | 18—20 | 2½ | Greediness is a folly. |
| | 9. The Foolish King and the Fakir, II. | 20—22 | 2½ | |
| | 12. The only Jewel . . | 27—29 | 1½ | A good and wise son is better than a thousand jewels. |
| | 13. The Basket of Melons . | 29—31 | 2½ | Bad effects of eating too much. |
| | 14. The Lost Rani, I . . | 32—34 | 2½ | Trickery punished. |
| | 15. The Lost Rani, II . | 34—36 | 2½ | |
| | 19. The Magic Well, I . | 42—44 | 2½ | How a dutiful daughter cured her father and kept her promise by surrendering herself to her enemy. |
| | 20. The Magic Well, II . | 44—46 | 2 | |
| | 22. Injustice punished, I . | 51—53 | 1¾ | |
| | 23. Injustice punished, II . | 53—55 | 2½ | |
| | Carried over . | ... | 17½ | |

*List of moral lessons contained in the Vernacular Readers in general list in the United Provinces*—contd.

| Name of book. | Lessons. | Reference to pages. | Number of pages covered by the lesson. | REMARKS. |
|---|---|---|---|---|
| | Brought Forward . | ... | 17½ | |
| Lower Primary Science Reader, Book I, Part II (concluded) (pages 130). | 25. To-morrow never comes . | 58—61 | 2½ | |
| | 32. Laziness brings Poverty | 79—82 | 3 | |
| | 38. The Ill-tempered Boy . | 101—104 | 3¾ | |
| | 44. Obey your Parents . | 121—124 | 4 | |
| | Total . | ... | 44½ | Pages out of 130 in the book. |
| Upper Primary Science Reader, Book II, Part I (pages 111). | No moral lesson . . . | ... | ... | |
| Upper Primary Science Reader, Book II, Part II (pages 120). | No moral lesson . . . | ... | ... | |
| Upper Primary Science Reader, Book III, Parts I and II contain no lessons on moral instruction. (Pages 106 and 122). | ...... | ... | ... | |
| | *Prose.* | | | |
| Upper Primary General Reader. Urdu (pages 144) . . Hindi (pages 107). | 1. No wealth is better than knowledge. | 1—2 | 2 | |
| | 2. Obedience to Teacher . | 3—4 | 2 | |
| | 3. Work and Effort . . | 5—7 | 2½ | |
| | 4. Industry surmounts every difficulty. | 7—9 | 2½ | |
| | 5. Mercy . . . | 9—11 | 1½ | |
| | 7. Good Manners . . | 12—14 | 1¾ | |
| | 8. Truthfulness . . | 14—17 | 3¼ | |
| | 9. Do good to others . . | 17—19 | 2¼ | |
| | 10. Mahadeva Govind Ranade | 20—22 | 2½ | Describes the good traits of his character. |
| | 11. Obedience to Father, I . | 22—25 | 3½ | |
| | 12. Obedience to Father, II . | 26—28 | 3 | |
| | 13. Others' things should be considered as trifles. | 28—30 | 2 | |
| | 14. Nasir-Uddin Ahmad, I . | 31—32 | 1¼ | Describes the good traits of his character. |
| | 15. Nasir-Uddin Ahmad, II | 32—35 | 2¾ | |
| | 16. All things are useful . | 35—37 | 2 | |
| | 17. True friendship of Abdul Qaslm. | 37—40 | 3 | |
| | 18. Fruits of good Society, I | 40—41 | 1½ | |
| | 19. Fruits of good society, II . | 41—43 | 2½ | |
| | 20. Fruits of good society, III. | 43—45 | 2 | |
| | 21. The goodness of Maharani Kunti, I. | 45—47 | 2 | Describes how she saved the members of a poor Brahman family by voluntarily endangering the life of one of her sons. |
| | 22. The goodness of Maharani Kunti, II. | 47—49 | 2¼ | |
| | 23. Tbe goodness of Maharani Kunti, III. | 50—51 | 1½ | |
| | 24. Honesty . . . | 51—54 | 2½ | |
| | 26. The blind vulture and the cat. | 57—60 | 2½ | The moral of this story is that bad company should be avoided. |
| | 27. Edward VII . . | 60—62 | 3 | Describes his love of industry and generosity. |
| | 28. Maharaja Ram Singh and an old woman, I. | 63—65 | 2½ | Describes how he succoured a poor woman. |
| | 29. Maharaja Ram Singh and an old woman, II. | 65—67 | 2 | |
| | 30. Anger . . . | 67—68 | 1¼ | |
| | 31. Justice of Nausheravan . | 69—71 | 2¼ | |
| | 32. Nothing should be without premeditation. | 71—73 | 2 | |
| | Carried over . | ... | ... | |

*List of moral lessons contained in the Vernacular Readers in general list in the United Provinces*—continued.

| Name of book. | Lesson. | Reference to pages. | Number of pages covered by the lesson. | REMARKS. |
|---|---|---|---|---|
| | Brought forward . | ... | ... | |
| Upper Primary General Reader—*concld* | 33. An Honest Fakir. . | 73—76 | 3¼ | |
| | 34. Fulfilment of Promise. I | 76—78 | 1½ | |
| | 35. Fulfilment of promise, II. | 78—81 | 2½ | |
| | 36. Fulfilment of promise III. | 81—83 | 2 | |
| | 37. Fulfilment of promise IV. | 83—85 | 1¾ | |
| | 40. A courageous girl. . | 89—91 | 2 | |
| | 41. A Dacoit (Bandib) and a Fakir. | 91—94 | 2½ | Contains a Fakir's moral instructions to a dacoit. |
| | 42. A faithful servant . | 94—96 | 2½ | |
| | 43. How to distinguish between good and bad. | 96—99 | 2½ | |
| | 45. True friendship, I . | 103—104 | 2 | |
| | 4ǒ. Ditto II . | 105—108 | 3¼ | Describes benefits of true friendship. |
| | 47. Ditto III . | 108—110 | 2½ | |
| | Total . | ... | 95¾ | |
| | *Poetry (Urdu).* | | | |
| | 2. Value of knowledge . | 113 | ½ | |
| | 3. Duty towards the teacher | 113—114 | ½ | |
| | 4. Work hard . . . | 114—115 | ¾ | |
| | 5. Grudge and envy . . | 115 | ¼ | |
| | 6. Always do good . . | 115—116 | ¾ | |
| | 7. Value of time . . | 116—117 | ¾ | |
| | 10. True friendship tested . | 119 | ¾ | |
| | 11 Fox . . . . . | 119—120 | 1 | Shows that one who digs a pit for another fails into it himself. |
| | 14. Patriotism . . . | 124—126 | 2¼ | |
| | 18. A dialogue between a father and his pet son. | 134—138 | 4 | Shows how children are spoilt by over-indulgence. |
| | 19. Discussion between Mercy and Justice. | 138—144 | 6 | |
| | Total . | ... | 17½ | Pages. |
| | *Poetry (Hindi).* | | | |
| | Verses by Kabir. . . | 78—80 | 2 | Various moral instructions. |
| | Bravery and courage . . | 82—88 | 6 | |
| | Verses containing moral instructions, I. | 88—89 | 1 | |
| | Verses containing moral instructions, II. | 91—94 | 3 | |
| | Verses by Rahim . . | 94—96 | 3 | |
| | Characteristics of bad persons. | 96—97 | 1 | |
| | Rama's instructions to his brother Lakshman. | 99—100 | 1 | About obedience to parents, master and the preceptor. |
| | Vashistha's instruction to Bharat. | 102—103 | 2 | Consolations on the death of Dashath. |
| | Total . | ... | 19 | Pages. |
| | *Prose.* | | | |
| Ahsan-ul-Intikhab (pages 128). | Extract from *Anwar-i-Saheli*, describing advantages of good company and social life. | 1—11 | 10½ | |
| | Extract from *Taubat-ul-Nasuh*—Confessions of Nasuh of his actions in the world before the Creator and a discourse on the instability of life. | 47—59 | 12½ | |
| | *Poetry.* | | | |
| | Hasan's verses on acquirement of knowledge. | 1—2 | 1 | |
| | Alam's verses on the vicissitudes of life. | 2—3 | 1 | |
| | Carried over . | ... | ... | |

*N. B.*—The entry in column "number of pages covered by the lesson" so far relates to Urdu versions.

*List of moral lessons contained in the Vernacular Readers in general list in the United Provinces*—continued.

| Name of Book. | Lesson. | Reference to pages. | Number of pages covered by the lesson. | REMARKS. |
|---|---|---|---|---|
| | Brought forward | ... | 25 | |
| | Zauq's verses on self-mortification and self-denial. | 14—15 | ½ | |
| | Amir's verses on the instability of life. | 17—18 | 2 | |
| | Nasikh's verses on redemption from avarice and on humility. | 23 | 1 | |
| | Miscellaneous couplets | 53—56 | 4 | |
| | Total | ... | 32½ | Pages out of 128 in the book. |
| Muntakhab'at-i-Urdu (pages 132). | *Prose.* | | | |
| | Nil. | | | |
| | *Poetry.* | | | |
| | Khushtar's verses on Rama's obedience to his father. | 12—22 | 11 | Moral instruction is contained in a few lines only, promiscuously. |
| | Zauq's verses on ups and downs in the world. | 27 | ½ | |
| | Total | ... | 11½ | Pages out of 132 in the book. |
| Lower Middle Hindi Reader (pages 167). | *Prose.* | | | |
| | Kindness and Beneficence, I | 1—3 | 2 | |
| | Kindness and Beneficence, II | 3—5 | 2½ | |
| | Life of Tulsi Das | 12—16 | 4 | Moral instruction is contained in only one paragraph which describes what Ramajan teaches. |
| | Acquirement of knowledge, I | 16—19 | 2½ | |
| | Acquirement of knowledge, II. | 19—21 | 2½ | |
| | Deep affection between two brothers. | 22—26 | 4¼ | |
| | A servant's attachment to his master. | 26—28 | 2 | |
| | A faithful servant | 43—47 | 4¾ | |
| | Generosity | 53—58 | 5 | |
| | Evils of Joking | 62—67 | 5 | |
| | Gratitude | 67—72 | 5 | |
| | Conversation | 72—77 | 4¾ | Instructions as to how to converse on social and other occasions. |
| | Ishwar Chandra Vidyasagar | 77—83 | 5¾ | Describes the good traits of his character and recommends their imitation. |
| | How to spend money | 97—99 | 2½ | |
| | *Poetry.* | | | |
| | Extracts from Ratuawali | 125—127 | 2 | |
| | Extract from Drishtant Tarangini, I. | 127—128 | 1¾ | |
| | Extracts from Drishtant Tarangini, II. | 129—130 | 2 | |
| | Teachings of Tulsi Das | 131—133 | 2¾ | |
| | Carried over | ... | 61 | |

*List of moral lessons contained in the Vernacular Readers in general list in the United Provinces*—continued.

| Name of Book. | Lesson. | Reference to pages. | Number of pages covered by the lesson. | REMARKS. |
|---|---|---|---|---|
| | Brought forward | ... | 61 | |
| Lower Middle Hindi Reader (pages 167) —*contd.* | Suvichar Mala (from Tulsi's Satsai). | 133—135 | 2¼ | |
| | Verses by Girdhar, I | 136—138 | 2¼ | |
| | Verses by Girdhar, II | 138—140 | 2 | |
| | " by Brind, I | 140—142 | 2½ | |
| | Ditto, II | 143—145 | 2¾ | |
| | Total | ... | 72¾ | Pages out of 167 in the book. |
| | *Prose.* | | | |
| Sangrah Shiromani (pages 150). | Nothing in the world is sweeter than reputation. | 28—30 | 1½ | |
| | Union | 30—32 | 2½ | |
| | Falsehood produces bad result. | 33—36 | 5¾ | |
| | Moral Maxims | 36—41 | 5¾ | |
| | Mortality | 42—45 | 3¾ | |
| | Obedience | 45—48 | 2½ | |
| | *Poetry.* | | | |
| | Extracts from Sabha Bilas | 118—122 | 4 | |
| | Total | ... | 23¼ | Pages out of 150 in the book. |

In the readers in use in the middle sections stray sentences containing moral instruction are found in other lessons here and there. These have not been accounted for in the above list.

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## (5) *Note on Moral Instructons, by J. G. Covernton, Esq., Director of Public Instruction, Burma.*

With reference to the second subject mentioned in your no. 329-336, dated the 4th July 1910, *viz.*, Moral Instruction, and the questions and requirements set forth in the printed memorandum on that subject forwarded with your letter I have the honour to report as follows :—

(*i*) (*a*) *Vernacular Readers.*—I append a statement prepared by the Officiating Editor of Vernacular School Text Books, Mr. Yeo Wun Sin, a Chianaman by race and a Buddhist by faith, showing :—

(1) What books are generally used for religious teaching in Burmese vernacular schools in this Province.

(2) What "moral" lessons are included in the Burmese vernacular readers sanctioned for use in registered schools. It will be noticed in regard to the latter that the "morality" of certain lessons is less obvious to Western than to Eastern minds and that not a few of the lessons are derived from other than Burmese sources. It should be pointed out that there are two sets of sanctioned Burmese Readers current in the Province. Mr. Yeo Wun Sin's note deals with the new set. A Burman Assistant Inspector, Maung Zaw Pe, who has also been consulted on the subject writes that he prefers the *old* Readers because their treatment is more in conformity with the traditions of the Burmese language and literature. In the old series the lessons dealing with religious or moral subjects may generally be divided into two categories, firstly one which includes myths and legends, and secondly a more distinctly ethical one which contains fables (mainly of the 'animal' type familiar in Æsop and the Hitopedesa) and direct moral lessons regarding control of temper, repression of envy, prudence, ideals of character and the like. It should be added that neither the old nor the new series proceeds beyond Standard V and that in Standards VI, VII, VIII and IX the "Wethandaya" and "Mahajanaka" are commonly read. Unsanctioned readers are occasionally found : of these the

one with the most direct ethical bearing is a "Thinbongy" Reader compiled by Ledi Saydaw, a Burmese Buddhist monk and preacher of great reputation, whose missionary efforts have quickened and revived zeal in behalf of their religion and its ethical system among the Buddhists of the province.

(b) *Anglo-Vernacular Readers.*—Anglo-Vernacular Schools use the same Vernacular Readers as the Vernacular schools. The English Readers are various: the series recommended in the Code (page 107) is one of Macmillan's which has been prepared specially for Burmese schools but which does not extend beyond Standard VI. Managers, however, are at liberty to use other readers. In Standard VII (the examination of which is held by the Education Department) the English reading book is prescribed from year to year by the Department. This year's book is Barrow's Junior Prose Reader. In Standard VIII the reader may be prescribed by the Department but it is now usual to permit managers freedom of choice within the limits of the approved list. In Standards IX and X the books selected are determined by the regulations of the Calcutta University. All the readers used contain stories with a moral tendency and most of them have also a certain number of distinctly moral lessons direct or indirect, *e.g.*, in Macmillan's series the following lessons may be cited:—

*Book I.*—The Wasp and the Bee (people who do good are liked, those who do evil are shunned).

The Horse (kindness to animals is inculcated).

God. (God as the Creator, the giver of good, and the preserver).

Fox and Crow (triumph of roguery).

Father, Mother and Son (duties of children to parents).

*Book II.*—Two Honest Men.

A Good Bargain (do not tell lies in order to get gain or on any other account).

"Try Again".

The Faithful Servant.

*Book III.*—Speak the Truth.

The Dog and the Merchant (do not act hastily or inconsiderately).

The Old Man, His son and the Ass (do not try to please everybody).

The Stolen Nest (kindness to animals).

The Tree as a witness (liars are found out).

*Book IV.*—The poor Woman and her necklace (a thief is discovered and put to shame).

"Johnny" (filial affection).

Family Affection (verse).

Burmese Proverbs and Maxims.

Little by little (verse—Perseverance).

(ii) *Manuals of Moral Instruction and Direct Moral Instruction.*—School Manuals of the kind indicated are not in use in Burma. On the other hand, as will be gathered from Mr. Yeo Wun Sin's note, such Burmese religious or moral classics as the Mingalathok, the Atwin-aung-gyin (conquest of the desires and passions) and the Lokaniti take their place in Vernacular schools and to a certain extent in Anglo-Vernacular schools managed by Buddhists. Many Anglo-Vernacular schools are managed by European or American Missionaries, the most gratifying results of whose efforts in behalf of religion and morality are perhaps due rather to their racial and individual characters than to the direct operation of the doctrines expounded. In Mission schools in almost all cases the acceptance of religious and moral instruction in accordance with the tenets of the denomination concerned is a condition of admission. Thus the Bible, or its equivalent in the form of Bible stories, serves as the basis of most of the moral instruction given in schools managed by Missions. Christian prayers and hymns either in the Vernacular or in English are also in common use in the majority of such institutions. In some Catholic schools pupils are taught to sing Latin canticles although they have no knowledge of Latin. In American Baptist schools the work of the day is usually opened with religious exercises and closes with a prayer or hymn. There is also direct religious teaching. In Catholic schools moral and religious instruction is given daily in the afternoon. In a few Anglo-Vernacular schools Head Masters or Managers have organized occasional series of lessons or addresses on moral subjects apart from religion (*e.g.*, in the Government High Schools, Rangoon and Sagaing, and the Methodist Episcopal School, Rangoon), but such instances are rare. In the higher standards in Burmese puplis read the Wethandaya and the Mahajanaka, which are stories conveying not a little moral teaching both direct and indirect but of course tinged with Buddhist views. The Lokasara, a Buddhist moral treatise in verse, may also be read.

(*iii*) *Trend of public feeling in the matter of direct moral instruction.*—The subject has been handled to a certain extent in provincial Annual Reports, *e.g.*, that of 1908-09, pages 24, 34, 35. Except among the most highly educated members of the various European and Asiatic communities represented in the province, there appears to be but little enthusiasm for "moral instruction" as such, *i.e.*, apart from religious instruction. At best teaching in this kind would be accepted as a *pis aller*, its obvious and inherent defect in the eyes of most persons being the lack of efficient "sanctions" intelligible to the puplis concerned. Whether such instruction should be "direct" or "indirect" is in these circumstances of comparatively slight importance. A common sense view is that the direct method is preferable since obviously it would not exclude "indirect" moral influences and the one would thus reinforce the other. Moreover if religious instruction is not to penetrate into schools managed by public authorities, and so long as among Burmese and Indians parental guidance and control and the influences of the home and the community remain what they are, it becomes an absolute necessity that the teacher should not only exercise upon the taught a general stimulus to moral progress but should also furnish him with the elementary data of practical ethics. The scholar must be told what Right is, and as plainly as possible, and the telling must be supported by counsel and direction appropriate to his surroundings and his needs. On the other hand now that Government has sanctioned the admission of religious teaching into schools under public management in Burma and since Buddhist societies and the Mahomedan and Hindu communities are awakening to the desirability of the teaching of their respective tenets in those aided schools with the management of which they are directly concerned, and as Missionary bodies supervise or control those schools which do not fall within the categories indicated, a discussion of the comparative values of direct and indirect moral instruction becomes for this province at any rate almost irrelevant. Ninety per cent. of scholars in Burma are (nominally at least) Buddhists. As a faith Buddhism has the good fortune to possess an ethical system at once lofty and enlightened yet in its elements reducible to simple principles unencumbered by theological subtleties or metaphysical refinements and capable of practical application—witness the Book of the 38 Beatitudes (the Mingalathok or Mingala Sutta), the five Commandments, the Duties of children and the Precepts of the Eightfold Way. Further it is bound up with all that is best and most stimulating in the history and traditions of the country and of Burmese society. Thus ethical instruction based upon Buddhism appeals not merely to the power of Reason (often a broken reed on dealing with children and semi-barbaric people) but to the more potent instincts of Patriotism and Religion. Hitherto its main defect has been a lack of dynamic force in the moral sphere but the reawakening that is evident among the better classes of both the laity and the monks should afford a remedy. To subsitute for a natural and national lever of this kind the pale abstractions of 'direct moral teaching' with its colourless sanctions, unintelligible ideals and artificial handbooks (to which no more reverence would attach than to any other 'Reader') would be to sacrifice in the most wanton way the materials and instruments which Time and Nature have provided to our hand. Only when the moral pabulum of the country has been tried and failed or when circumstances contra-indicate its employment should recourse be had to artificial forms of nourishment more highly peptonized and concentrated.

On the assumption, however, that religious instruction is maintained and extended few Burmans or Indians in Burma would object to the introduction of direct moral teaching as a complement provided that it did not conflict with the principles of the religious teaching and especially if it supplemented the latter in certain directions, *e. g.*, on details concerning sexual morality, the conduct of business and affairs, 'civics' and such other departments of practical life as religious instruction does not ordinarily deal with or, if it does, handles from a different standpoint. But all agree in laying stress upon the character and personality of the teacher. Usually he would be a layman and as such he would lack the adventitious reverence that his 'robe' or 'cloth' inspires. To compensate for this defect his personal influence and prestige, his life and experience must be such as to command special respect: unsupported by these attributes in the teacher the teaching may prove worse than futile.

2. The 'Pali' schools of Burma fall into three classes:—

(*a*) Ordinary registered schools Vernacular or Anglo-Vernacular in which, in addition to the usual subjects, Pali is taught in accordance with the respective curricula prescribed in the Burma Education Code. In Vernacular schools Pali may be begun in Standard III: these schools may be monastic or lay.

(*b*) Unregistered monastic schools in which in addition to vernacular reading and perhaps arithmetic a modicum of Pali is acquired by the pupils *memoriter* and in accordance with ancient indigenous methods of instruction. Such texts as are used are generally inscribed upon palm leaves in Burmese script or on 'parabeiks' (scrolls made of rough black paper and inscribed with Burmese letters by means of steatite pencils.) In none probably would the ancient Pali scripts be used or understood. By no means, however, do all pongy kyaungs teach Pali or do all pongyis understand it.

(*c*) Special schools registered by the Department and preparing pupils for the Patama-byan examinations, the regulations, books and requirements for which are given in Sections 306-317, Burma Education Code (pages 56-59). These schools are held in monasteries and are attended by youths or adults (not by

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children) the large majority of whom are monks (or upazins or koyins): a few nuns and laymen also become candidates. The teachers are pongyis and the teaching is up to a high standard according to indigenous ideas of instruction. Questions of textual or other criticism as the term is applied in Western scholarship are not discussed and modern antiquarian philogical and philosophical problems are equally ignored.

It cannot be said that any precise system of moral instruction as such is pursued in schools of any one of these three classes. Such ethical teaching as is furnished is afforded by the perusal or recitation of the sacred books and of classical texts (which, however, are not studied solely for moral purposes), the admonitions of the pongyi or teacher and the rules of the institution attended. In the ordinary pongyi kyaung (registered or not) the stick is a potent instrument of morality and regeneration. In the monastic schools apart from the rod, the indirect and incidental influences of life in the kyaung undoubtedly conduced to humility, seriousness and the simpler virtues that they do so less now than formerly is due to the fact that most pupils spend a far shorter term as *residents* in the kyaung than was the custom a generation ago. In the special Pali schools the pupils are mainly in Orders and are bound to conduct themselves in accordance with the rules laid down for their Order and the Orders of their superiors in the hierarchy.

I append an extract from the special report submitted in July 1909 by Maung Zaw Pe, Assistant Inspector, Eastern Circle, and then officiating Inspector, Southern Circle. It affords an interesting picture of school life in the average pongyi kyaung and endeavours to estimate its general influence and educational effect.

3. A report on the questions connectedy with the differentiation of the curriculum in Secondary schools will be submitted separately.

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*Note regarding moral lessons in the Vernacular Readers by Mr. Yeo Wun Sin, Officiating Editor of Vernacular School Text Books, Burma.*

Owing to the former policy of the Government to observe religious neutrality in schools' no separate vernacular text-book for religious instruction has been provided, nor have religious lessons been included among the various subjects dealt with in the vernacular reading books. Only in monastic schools have religious lessons been taught to some extent by means of such books as (1) Mingala Suttam called Mingalathok in Burmese, or "the Thirty-eight Rules of happiness or blessings," uttered by Gautama Budha; (2) the Ajjhata Jaya Mangalam Atwin Aung Gyin written in praise of Gautama's conquests over sins of the heart and mind; (3) the Bahira Jaya Mangalam Apyin Aung Gyin, which represents his moral victories over wicked personages, who opposed his doctrines or otherwise led him into sin; (4) the Ratana Panjaram (Ratana Shwe Gyaing), which extols the worthiness of Budha, the law and the Priesthood. Along with these, the *Lokaniti*, which is a book of Proverbs and Maxims, has also been taught. These Books are all written in Pali verse with Burmese translations, and are calculated to foster piety and reverence for Budha and his teaching. Besides these, there are two other religious books, Wethandaya and Mahajanka, which are Burmese classical prose, prescribed for Standards VI to IX. They are the stories of anterior births of Gautama Budha, and illustrate also great moral truths, namely, unstinted liberality in the life of Wethandaya, and perseverance in that of Mahajanaka.

As regards moral lessons, they are to be found more or less in every vernacular reader. They are carefully graduated, and are written in simple language suitable to the minds of children. They are presented in an attractive and interesting manner, generally as fables in the earlier books. Only such moral lessons have been selected, as are fitted to instruct the mind, to elevate the moral nature, and by example and precept to instil those principles, which are necessary for the formation of character, and the repression of evil habits. In the higher Vernacular Standards, namely, VII, VIII and IX, a book of Burmese classical poetry, called "Lokasara," is used. It inculcates the principles of morality in the every day life of an individual.

Lesson on the following moral topics are contained in the readers.—

First and second standards—

Lesson 37 Gratitude.
" 38 Gratitude.
" 39 On seeking good and shunning evil companions.
" 67 Evils of telling falsehoods ("Wolf, Wolf").
" 68 Stealing.
" 70 Respect and obedience to elders.

Third standard—

Lesson 1 Justice, (The Otter and the Fox)
" 3 Manners.
" 5 Envy.

Lesson 14 Self-control and temptation.

" 14 The consequences of greed and covetousness, namely, shame, remorse and sorrow.

Fourth standard—

Lesson 1 Friendship (the Crow, the tortoise and the deer).

" 4 Retribution.

" 13 Deceit.

" 15 Filial duty.

" 22 Courage and fortitude.

Fifth standard—

Lesson 1 Malice.

" 3 Courage.

" 4 Justice.

" 6 Respect.

" 7 Miserliness,

" 8 The values of silence,

" 9 Vanity of wordly pleasures,

" 11 Courage (the story of Caractacus),

" 13 The love of justice (as illustrated by British rule).

" 15 Home discipline (the story of Washington),

" 17 Vanity (Solomon and the Hoopoes),

" 22 Corruption (King Dadiwashana and the mango),

" 24 Gratitude.

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*The Organization of Budhist Religious teaching in Budhist Vernacular Schools.*

From the remote past, there has existed in Burma a unique system of indigenous education imparted through the agency of the monasteries which are widely scattered in all parts of the province. The Monks or Pongyis reside in these time-honoured institutions and perform the priestly offices required by the laity and educate children. For their services they are supported by gifts and alms. The primary function of a pongyi is to impart religious instruction and in order to attain that object, reading and writing are taught as gateways to the knowledge of the sacred texts in which the Buddhist religion abound. In the olden days, the pongyi, as the spiritual head of the village in which he resides, exercised a sway over the village folk over whom he has some authority and parents generally sent their children to the kyaung to receive instruction. A boy when admitted to a school is required to stay there until the period of the "novitiate" is over ordinarily at the age of 15 or 16. He feeds and sleeps at the monastery and his life thus bcomes closely interwoven with that of the pongyi-kyaung. In return for the tuition he receives, he is expected to serve as a factotum as occasion requires and has to be obedient and truthful, respectful and submissive. The instruction is given by the head Pongyi himself if he has no Upazins or Koyins under him, but if he has any, all of them take part in the tuition. It is also usual for an advanced pupil to teach those who are less advanced, and a system not unlike the pupil-teacher system therefore exists. The character of school-work in an average pongyi-kyaung may briefly be sketched as follow :—

Before dawn the pongyi and his pupils rise and the early hours of the morning are spent in reciting prayers, generally lasting for nearly half an hour, supplemented, in some cases. by sermon and addresses. When the prayers are over preparations are made for the morning meal. Some pupils follow the pongyi in his begging rounds. The first session of study commences at 7-30 and lasts till about 10-30. During this session, the pupils revise the old lessons and master new ones. The reading matter invariably consists of the Thinbongy, Mingalathok, Apyinounggyin, Atwinounggyin, Ratanshwe chike, Lokanati, Pareikgyi and Sangaha. The classes are based on the above books and the pupil learns what the pongyi thinks fit to give him. The books used, with the exception of the Thinbongyi are Pali Burmese texts and pupils either read them or learn them by heart. The babel of voices produced by learning the lessons is quite reasonant and can be heard from afar. From 10-30 to 12 the children are employed in discharging domestic duties for the pongyi's midday meal. The second session commences at 12 and lasts till the evening, with short recreations at frequent intervals. Pupils again read the Pali-Burmese texts, interpersed with writing, composition and sometimes arithmetic. The more advanced pupils are encouraged to read the Vitthus and verses, such as Temi, Wethandaya, Jatakas, Sonmasas, etc. At about 5, the pupils disperse after reciting prayers and 'shikoing' the pongyi. Some go back to their homes for dinner while some play and recreate in the cool sweep of sand in the compound of the monastery. At the call of the signal sound of a gong or 'Kaladet' at 7 P.M., pupils again gather and again recite night prayers with the pongyi; after which they are allowed to read, or write or revise old lessons at their own leisure and then to retire for the night.

The method of teaching employed is undoubtedly not rational and systematic, but very often mechanical; the mechanical teaching, however, is not confined to the pongyis: it is "the intellectual vice of the Burmese race." Notwithstanding irrational methods and unsystematic ways, pupils generally are able to read and write and the standard of literacy, unlike the other provinces in India, is very high in Burma. It will perhaps be not out of place to expatiate on the character of the Buddhist religious teaching. A careful analysis shows that the teaching is being carried on through the following means or agencies, *viz.*, the devotional, ethical, and the practical. The prayers with which schools open and close the work of the day appeal to the devotional side of the religion. They invoke refuge in and adoration to Buddha, Dhamma and Sangha, or the "Three Gems," followed by the recital of Pali formulas according to the traditional customs. Promise is also made in the course of prayers to observe the "*Pancha Sila*" or the five precepts, *viz.*, (1) not to kill any living creatures, (2) not to steal, (3) not to commit adultery, (4) not to tell a lie and (5) lastly not to drink any intoxicating beverages. A young child is easily impressed, and the daily recital of prayers fills his receptive mind with ideas of piousness and permanently influences him for good for rest of his life. The ethical aspect is gathered from the study of the Pali-Burmese texts, especially of the Mingalasuta or the Book of the 38 Beautitudes. This book is invariably used as the first reading after the Thinbongyi in all indigenous schools. It contains a series of short moral tracts or rules of conduct for the guidance of people at large and it enjoins them, amongst others, to dissociate from the foolish but to be friends with the wise, to support parents and relations, to be good in action and pleasant in speech, to shun evil deeds, to be submissive, obedient and to forebear. The " Singalovada Sutta," wherein mention is made of the five duties to parents, children, pupils, teachers, elders, masters, servants and friends is also occasionally taught to some of the more advanced pupils. The five precepts and the eight precepts also lay down certain ethical principles. In short, the literature of the religion is closely interwined with ethics, forming a basis of principles to be put into practice in order to clear the way to Nirbana.

The practical applicability of the religion depends in a great measure on the personality of the head teacher. The ethical principles inculcated can be put into practice if the pongyi is careful enough to watch over the behaviour of his pupils. Moreover there are the surrounding influences in a monastery which must go to form the character of a pupil, either consciously or unconsciously. A spacious playgronnd, and a commodious building combined with a brotherly association of the Kyounthas, the supervision of the older boys over the younger ones and the domestic duties which pupils are bound to discharge, all these tend to produce a corporate life in a monastery; and the atmosphere of religion which pervades in the whole school influences the tender susceptibilities of a young mind and moulds him in the formation of character. Recognizing the influencee which Buddhism holds over the manners and morals of the Burmese people, as long ago as 1870, Sir Ashley Eden the then Chief Commissioner of Burma expresses the opinion that he "can contemplate nothing more calculated to exercise a mischievous effect upon the moral conditions of the people than a state of things under which their religious teaching would be materially lessened. It is beyond question that the religious teaching of the kyaungs has a decidedly beneficial influence upon the people, and even as secular seminaries except in the matter of arithmetic, there are no vernacular schools of the lowest class, which in all that these schools profess to be are more successful.

A similar opinion is shared by the present Lieutenant-Governor and Sir Herbert White is "convinced that training in the vernacular and especially in the monastic school is likely to tend to the preservation of the characteristic virtues of the Province and he believes that in the encouragement and improvement of these schools lies the best hope of maintaining a level standard of manners and morals among the masses of the people."

Pongyis of to-day, unlike their compeers of a generation ago are more independent and less meditative and follow their own bent of mind with less regard to the community or order to which they belong. The reverential attitude shown towards them by the laity has weakened in zeal and ardour and the influence which pongyis exercise has not been as strong as in days of yore. Pupils are also not confined to monasteries only, but gain admittance to lay schools. At the same time, very few pupils above the age of 14 or 15 remain in schools, because parents feel the necessity to get the help of their children in agricultural operations. The pongyis therefore, have to work under changed conditions. In the aided monastic schools, the teaching of secular subjects takes the place of religious instruction in the afternoon session, while the morning session is devoted partly to religious and partly to secular subjects. The feature of religious education as regards the recitation of prayers and the delivery of addresses and sermons as well as the sourrounding influences of a monastery remains much the same as before, but in some schools the repetition of multiplication tables precedes the early morning prayers. The Mingalathok and other books have to be studied as before between the hours of 7 and 9, but the teaching is carried on with less interest and enthusiasm because they are not included in the curriculum. The traditional method of learning by rote remains still in force and the teaching, as usual, continues to be mechanical. If more rational and intelligible methods were employed by making pupils to understand what they learn, the results obtained would far more be useful and beneficial. From personal experience and from information gathered from various sources I am convinced that less importance has been attached to religious education than formerly and the result is the gradual decay. The deterioration is undesirable and I am of opinion that every encouragement should be given to infuse the old spirit, of course on a sound and rational basis, if the indigenous characteristic of the Burmans are to remain unchanged.

## Appendix to Mr. Covernton's notes.

*Office of the Director of Public Instruction, Burma.*

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*Notification.*

*Dated Rangoon, the 27th April 1910.*

No. 90.—The following instructions for the imparting of religious instruction in Government, Municipal and District Cess Schools in Burma are published for general information :—

1 Inspectors will report annually to the Director of Public Instruction the number of schools in their respective circles belonging to either Government, District Cess or Municipalities in which religious instruction is required. Reports should reach the office of the Director of Public Instruction not later than the 30th April in each year.

2. The reports, which should be accompanied by schemes briefly exhibiting particulars of the proposed instruction, should show :—

(a) the creeds or denominations for which facilities of religious instruction are demanded;

(b) the number of children belonging to each creed or denomination in attendance at the schools concerned;

(c) the arrangements proposed at each school in the case of each creed or denomination. Under this last head the time and place selected for religious instruction, the name, profession and qualifications of the instructor or instructors should be fully stated. The remuneration, if any, of the teachers employed will in no case be provided from public funds.

3. The reports should also show what religious instruction (if any) has been previously imparted in the schools in question, to pupils of what creed or denomination, under what arrangements and whether with the sanction of the District Cess, Municipal or Departmental authorities.

4. Prior to the preparation of their reports, Inspectors should consult in the case of District Cess and Municipal Schools the Deputy Commissioners and the Municipal authorities, respectively. In the case of Government Schools possessing Governing Bodies or Committees the Inspectors should consult these bodies: if there is no Governing Body or School Committee the Inspector of Schools should propose, after consultation with the Head Master, such arrangements as may appear necessary. In all cases the Inspectors' reports on this subject should include a brief statement of the views and recommendations of the District Cess and Municipal authorities and of Governing Bodies and School Committees.

5. In no case will religious instruction be permitted in any Government, District Cess or Municipal School except upon a report submitted by an Inspector of Schools to the Director of Public Instruction in accordance with these instructions, and with the approval of the Director of Public Instruction.

6. In all cases where facilities for religious instruction are demanded, the following conditions laid down by the Government of India for the imparting of such instruction shall be made known to the authorities and Head Masters of the schools concerned :—

(a) Religious instruction shall be given only in those Government or Municipal Schools where parents and guardians ask for it.

(b) Parents or guardians of all religious denominations shall have an equal right to ask that facilities shall be provided for the imparting of religious isntruction in their particular creeds.

(c) Facilities shall be provided for such instruction only out of school hours.

(d) Where facilities are asked for by parents and guardians professing, different religions, arrangements must be made for the instruction to be given in different class rooms or at different times.

(e) No pupil shall be required to attend the classes unless his parent or guardian expresses a wish that he should attend; but any pupil whose parent or guardian has expressed such a wish shall be required to attend such classes in the same manner as he is required to attend the ordinary school classes.

(f) The teacher by whom such instruction is imparted must be selected by the parents and guardians; subject to the proviso that the Inspector of Schools may exclude from any school any such teacher whose association with the children he may regard for disciplinary reasons as undesirable.

(g) The fees, if any, for religious instruction must not be collected with or included in the schools fees.

(h) No public ceremony, festival or public acts of worship may be allowed within the school precincts.

(i) Religious instructors will be subject to the general control of the Head Master of the school who will be responsible that nothing takes place which could possibly offend the feelings of the pupils professing other religions.

7. Instruction should be given regularly and not less often than once a week: so far as is possible it should be arranged, upon a systematic and graduated plan suited to the age of the pupils.

8. Subject to the conditions laid down by the Government of India and the requirements of paragraph 5 of these instructions District Cess and Municipal authorities in the case of District Cess and Municipal schools respectively, and Inspectors of Schools in the case of Government Schools within their respective circles or charges will be at liberty to make such arrangements for the imparting of religious instruction as may be most convenient in the circumstances of each locality and most agreeable to the expressed desires of parents or guardians.

9. These instructions are issued with the approval of the Local Government; they are experimental only and sanction will be withdrawn if experience shows that it is undesirable to maintain them.

J. G. COVERNTON,

*Director of Public Instruction, Burma.*

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## (6) *Note on Moral Instructions, by the Hon'ble Mr. H. Sharp, Director of Public Instruction, Eastern Bengal and Assam.*

It is difficult to glean facts on the subject of moral instruction in schools. Statements are apt to be very general and to stray into the excluded ground of home-influence, the personal influence and responsibility of the teacher and the value of hostel superintendence. Opinions, supported upon impressions rather than upon solid facts and figures, are vague and unconvincing; and their strong divergence cautions against ready acceptance.

2. (i) *Direct moral instruction in text-books.*—Generally speaking, this is absent. Text-books, whether for vernacular or anglo-vernacular schools, are replete with moral lessons. But they are ordinarily of the indirect type. In the lowest classes there are generally a few lessons on simple virtues or vices. But these quickly give place to fable, myth, anecdote or biography, each with a conscious moral intention, but not strictly direct, save that the title often bespeakes the intention and that the moral is definitely drawn at the end. Nor, save that direct inculcation rapidly gives way to suggestion, is any organised scheme generally observed.

3. (a) The readers most widely in use in lower primary schools were compiled by Messrs. Basu and Majid, under the auspices of the Education Department. Their contents were carefully scrutinised before publication and more than once revised to conform with the wishes of the department. I find that, in the 1st reader, 14 out of 45 lessons (including poetical pieces) may be classed as having a moral bearing; and in the 2nd reader the proportion is 14 out of 58 lessons. In the vernacular readers produced by local authors the proportion is somewhat higher. For, in Basu and Majid's readers, in addition to the lessons on domestic animals, natural phenomena, etc., of which such books are generally composed, a larger space is devoted to local history and simple science lessons on such subjects as heat, plant, life, etc. The moral lessons generally take the form of fables or anecdotes, such as that of the shepherd boy who cried "Wolf! wolf!" or the story of George Washington and the cherry tree; and their character is often indicated by their title—"Truth telling," "Kindness," and so forth. The lesson concludes with a few lines explaining the moral to be drawn from the story.

4. In Messrs. Basu and Majid's 1st reader (read ordinarily in Class III of a primary school) the following prose lessons may be cited as having an intentionally moral tendency:—

1. "The hare and the tortoise." The fable is told simply. At the close the teacher is represented as asking the class the moral and deciding in favour of "Slow and steady wins the race."

2. "I cannot tell a lie." The story of George Washington is told; and the moral of brave truth telling pointed out in a few lines at the end.

3. "The crow and the jackal." This is the La Fontaine fable of the fox and the raven. The moral is drawn in two lines at the end.

4. "The prodigal son." This is the biblical story modified to suit conditions of Indian life. The moral is drawn that God is kind to us just as our earthly father.

5. "Maternal love and the wounderful judgment."

The story of Solomon's judgment. Two paragraphs at the end are devoted to emphasising our duties to our parents for the love they show us, and the care they take of us.

6. "Greediness." The fable of the "Dog with the meat, and the shadow" is given and the moral drawn. The fable of the goose that laid golden eggs is given as an additional illustration.

7. "The Brahman and the mongoose.' This story, which is similar to that of Llewellyn and Gelert, is told to illustrate the maxim "Do not do anything when you are in anger."

8. "Do not boast." The story of the two travellers who met a bear, whereupon the boastful one climbed up a tree. The moral is given in big letters at the end :—"Let courage be proved by deeds not by words."

9. "Union is strength." The fable of the old man, his sons and the bundle of sticks is told in Indian form. An imaginary schoolmaster draws the moral at some length at the end.

5. Similarly, the lessons of one of the privately produced books are as follows :—

1. "Loyalty." Describes the benefit of British rule, and closes with precepts for loyalty to the king and his officers.

2. "Doing good to others." The moral is pointed out at the beginning and then illustrated by the life of David Hare.

3. "Forgiveness." The duty of doing good for evil is dwelt on, and then illustrated by the lives of four brothers Ibrahim, Selim, Omar, Osman.

4. "Kindness." The duty of kindness is pointed out; and then follows the life of John Howard.

5. "Greatness." The life of Kalinarayan Roy. There is no moral drawn.

6. "Hospitality rewarded." The moral is given at the beginning and illustrated by the story of Czar Ivan and the poor cultivator.

7. "Signs of greatness." The moral is laid down at the beginning and illustrated by the life of George Washington.

8. "Self-improvement." The life of Nawab Abdul Latif of Faridpur is told in a form to point the moral, which is nowhere definitely expressed.

9. "Iswar Chandra Vidyasagar." The lesson begins with a short moral on self-improvement by study, and the life is then told.

10. "Good nature." This is simply a poem on the value of good nature.

11. "Good advice." A string of moral precepts of all kinds in a poem of eight stanzas.

12. "Love of fine clothes." "Consider the lilies of the field" amplified in poetical form.

6. (*b*) In Anglo-vernacular schools, the books used in the lower classes are generally the same as those used in vernacular schools. In reading books prepared for middle classes the place of fables and anecdotes is taken by biographies of local worthies, such as Iswar Chandra Vidyasagar or Muhammad Mohsin, whose lives are treated as illustrating the value of learning and the virtue of benevolence. So traditional has the form of a vernacular reader become that, just as in a primary reader one naturally expects to find the story of the "Lion and the mouse" or the boy who cries "Wolf! wolf!" so no reader for middle classes would appear to be complete without the lives of the two persons just mentioned.

7. It is unnecessary to speak of the English books used in the lower classes where that language is taught. The type of the moral lessons is substantially the same as in Messrs. Basu and Majid's readers.

8. In the higher classes, the books read are generally those recommended by the University. Such works as "Robinson Crusoe" and Kingsley's "Heroes" are distinctly moral in tone; but the lessons are even less direct than in the kind of readers noticed above.

9. A number of opinions of headmasters have been collected as regards the interest taken in moral lessons by teachers and pupils. These opinions vary widely. One headmaster says the lessons "have a most wholesome effect in unobstrusively finding access to young minds and storing the imagination with high ideals of thought and action." The very next opinion says that "the method and style in which these lessons are dealt with appear uninteresting to many readers of them. The subject-matter is taught in most cases by long stories, and it often becomes hard for boys of ordinary merit to glean at once the morals therefrom. The teachers of course try their level best to unfold them to their pupils in an attractive manner in the class. But still, as far as I can see, boys are apt to attach less importance to the moral side of the thing than the grammatical and explanatory details of the stories dealing with moral lessons." On the whole, the majority of opinion is not re-assuring. The headmaster of one of the largest privately managed schools in the province say that, in the lower classes, "moral lessons on a large variety of subjects such as loyalty, truthfulness, honesty, duties of children towards their parents and superiors, are found scattered. But these lessons are read in the class room in the same stereotyped way as the other lessons. And teachers very seldom take the trouble to impress upon the minds of their pupils the important moral truths embodied in these lessons." All this indicates that the books are read as a study of language and with the examination in view.

10. (ii) *Manuals of moral instruction.*—No such book is at present in use in the schools in this province. But a little pamphlet on the evils of intemperance has recently been prepared for the education department by Captain Gourlay, I.M.S. The subjects dealt with are the following :—(i) Over-eating and want of exercise, (ii) evils of alcoholic drink, (iii) evils of drugs (tobacco, *ganja* and opium). This little publication is being produced both in Bengali and Assamese by Government at a cost of under one anna and by next year will be in the hands of all teachers of elementary schools. The subjects are dealt with in the simplest

way, the physical and moral effects of excess on the system and character being explained in language which should be intelligible to the pupils of an elementary school. This is necessary because, although the work is intended as a guide to teachers, it is unlikely that the untrained *guru* will be able to enlarge much on the written text. As subordinate inspecting officers will be expected to see that proper use is made of this little manual, it will at least ensure that a minimum of moral instruction is imparted in every school. This pamphlet will ultimately be included in the larger manual wich is being prepared by the department.

11. (iv) *Other of methods of moral instruction.*—The only tangible evidence of any direct moral instruction commonly in vogue in vernacular or secondary schools is the existence in a few secondary schools of a sort of oral debating society conducted on the following lines. Discussions are held weekly or fortnightly in the school premises under the presidency of some senior teacher. Boys of the higher classes are required to produce essays and discourse on general moral subjects previously fixed for the meeting. The proceedings are concluded with an address by the president emphasising the importance of the subject. The system is reported to be in vogue in sixteen high schools in the Dacca Division (out of a total of 107). But of these sixteen schools it is regrettable to find that in several the discipline has recently been found to be very far from satisfactory—a fact which would lead one to conclude that the subjects chosen are of too general a nature to affect the ordinary life of the pupils. On the other hand this system (which is probably indigenous and derived from the controversies on religious topics held in *tols*) appears to me capable of expansion, and if developed on proper lines might form a very useful addition to the ordinary work of a high school.

12. Essays on moral subjects are given in schools. But it is admitted that the boys do not treat the moral side of these exercises very seriously.

13. I have found that a few (but very few) head masters have attempted, by weekly talks to the older boys, to infuse ideas of morality in a graduated and organised manner.

14. (iv) *Public feeling on the subject.*—Inspectors generally report that parents would be glad if moral instruction were given in schools. The opposite view is forcibly expressed by one headmaster:—"I do not know a single gentleman who ever took the pipe out of his mouth to ask me a single question as to the conduct of his boy, whom he takes for a model of virtue till the boy gets into a scrape. The guardian is then at once on the alert and will move heaven and earth to convince the teacher that there must be a mistake somewhere." It may be a fact that many parents send their children to school merely to pass examinations, are callous as to their conduct and would complain if the time of "serious" study were curtailed by the moral instruction. But, if this is so, the exceptions are numerous. The Inspector of Rajshahi says:—"The public in general have no such complaint as to the absence of moral teaching in schools, but the intelligent section of the public, who are acquainted with the system of education in the schools do complain of the total neglect of direct moral training along with intellectual and physical training." And my personal view founded on conversation with parents is that this attitude is commoner than is supposed. Direct moral teaching is appreciated; and its want is felt.

15. I have heard this view expressed more freely among Muhammadans than among Hindus. This is largely due to the intense orthodoxy of the Muhammadans, who regard with disfavour a system of instruction devoid of religion and calculated to impair the ties of descipline and obedience. Hence the popularity of *madrassas* and *maktabs*. At the same time the desire for secular education has grown enormously in recent years in this section of the community; and has led to the formation of such hybrid institutions as middle *madrassas*, which combine the middle English course with the work of a junior *madrassa*, the pressure of practical need grafting the subjects which may be of use in ordinary life on to the traditional course which is prescribed by complete orthodoxy. This movement has gone further; and a committee on *madrassa* reform which sat recently at Dacca has proposed a scheme for the inclusion of many subjects of the ordinary Arts course. As long as schools for general education remain, as they must do, open to members of both the Hindu and Muhammadan communities any introduction of lessons on orthodox morality, *i.e.*, morality based on doctrine, is impossible. And to a large section of the population the separation of the two is more repugnant than it is even to supporters of voluntary schools in England.

16. Subject to what has just been said, there is admittedly no reason why the common ground-work of morality should not be taught in schools which contain pupils of diverse creeds. I have noticed that the Hindu element ordinarily sets store upon general moral training; the Muhammadans always couple conduct with religion, and are solicitous that a mosque should be in the vicinity of the school or attached to a hostel.

17. *Moral instructions in indigenous institutions.*—This subject is of importance in this province. There are large numbers of *tols, madrassas, maktabs* and *Koran* schools. But the instruction is not strictly moral. It is wholly religious. Morality is sunk in religion. The *madrassa* teaches the doctrines and the rites of Islam. Sermons are preached. A moulvi of saintly life and a prayer-house are attached. Similarly in the *tol*, "the principles of morality are so completely blended with the religious practices and observances that it becomes hardly necessary for the teacher to inculcate lessons on abstract moral lessons." Here is a picture of a *tol*:—"The age of students entering *tols* varies from 8 to 14 years. The students are mostly Brahmans or Baidyas. They generally live in the house of the preceptor.

"In the morning every student must say a prayer or hymn before beginning his study, which commences at about 8 A. M. The teacher gives new lessons from 9 to 10 A. M. There

is no fixed hour for dismissal of the students, every student being free to leave his books when he likes. There is no roll-call and no asking for or giving permission to go out or to stay away and no punishment for absence. After finishing their midday meal, the students may sleep or spend the time in idle talk. They meet again at 4 P.M. and say their lessons or get their difficulties explained by the teacher. After saying the evening prayers, the students again meet at the *tol* and discuss among themselves in the presence of the teacher about what they have read or are reading. This meeting is sometimes made interesting by the teacher proposing a question and asking the students to discuss it. In all such cases two parties are formed, and the discussion may be carried on from day to day until one party is vanquished. The teacher also takes part in these discussions, but not with the beginners, who are seldom or never permitted to express any opinion on any question. There are many holidays observed in every month on which study is interdicted, but there is no vacation as in schools. When the preceptor goes to the house of any person on invitation he is generally accompanied by some of his senior pupils.

"From the circumstance of their living on the charity of the preceptor or other people the students are compelled to lead a very simple and abstemious life, free from all luxurious and most of the ordinary comforts of life even. This has a chastening influence on their conduct which may be said to be truly moulded by the example of the teacher under whom they live for years together and whom they regard as their father, friend and guide. The best moral lesson which the students in *tols* imbibe during the long period of their tutelage is unquestioning obedience to their preceptor and to the authority of the Shastras. They are not taught any book on morals and they never question the authority of what has been said in the book as regards right and wrong, virtue and vice, heaven and hell, gods and goddesses or the authority of the Brahmans. The habit of unquestioning obedience is an indirect result which follows from sternly but blindly observing all the ceremonies, usages and practices, based on theological or social injunctions and fostered by superstitions which have always helped to maintain the authority of the sacerdotal caste. Every *tol* preceptor is a Brahman, and the students mostly belong to that community. The teaching whether moral or intellectual is saturated throughout with the spirit of orthodoxy, and the maintenance of the prestige of the Brahminical creed. The culture, whether moral or intellectual, is a lopsided one, and there is hardly anything excepting the simple life and the obedience shown by the students to the preceptor in *tols* which may be worth imitating by the students in our schools and colleges."

To describe the system of moral training in such institutions would be to write an account of the rites and tenets of the Hindu or Muhammadan religions.

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## (7) *Note on Moral Instruction, by A. L. Wright, Esq., Director of Public Instruction, Central Provinces.*

In the Vernacular text books used in these Provinces the following lessons are devoted to direct moral instruction :—

| | | | | | |
|---|---|---|---|---|---|
| 3 lessons out of the last | 7 | in the Vernacular Reader | No. I. |
| 15 „ „ | 49 | „ „ | No. II. |
| 6 „ „ | 55 | „ „ | No. III. |
| 9 „ „ | 73 | „ „ | No. IV. |
| 4 „ „ | 56 | „ „ | No. V, Part I. |
| 6 „ „ | 50 | „ „ | No. V, Part II. |

A liberal choice of reading books is given to the managers of anglo-vernacular schools. Possibly the series most favoured is the Royal readers published by Messrs. T. Nelson and Sons. This series is so well known that it is needless to analyse the lessons. Many of them are directly moral lessons and many indirectly so. The interest taken in moral lessons varies with the predilection of the teacher. About half of our teachers neglect the moral entirely and treat the moral lessons as if they had none. They deal with the meaning of the lesson from the literary point of view only, and take no step to deduce its influence. The other half are beset more or less by the prevailing sin of the Indian teacher—the desire to lecture rather than to teach. These take the greatest interest in the moral lessons, and expound them with extreme unction and minuteness. They succeed in attracting the interest of the boys at the same time. The Indian boy has a very real pleasure in moral instruction and if it is set forth with fluency and vigour, will receive it with delight and store it in memory. The effect of those lessons is practically *nil*. The interest with which they are received is a purely academic or intellectual one. Throughout the discussion of the question of moral instruction in Indian schools this aspect of the case is overlooked. Experience shows that the Indian boy draws the sharpest of lines between the doctrines of morality and practical life. To put it succinctly, and without much exaggeration, he can appreciate the beauty and admire the tenets of morality and violate them in action at one and the same time without any sense of incongruity. In my experience theoretical morality has no appreciable effect in our schools. No manuals of moral instruction are in use in the schools of these Provinces.

In some few schools connected with religious or semi-religious associations moral instruction is given apart from the readers but this as a rule takes a formal shape. In missionary

schools it is less so, and appeals more directly to the pupils. I have no reason to believe that this teaching has any more effect than I have indicated above.

The desire for moral instruction is not general and, such as it is, is confined to the upper and the educated classes. The older men in these, in some instances, are shocked at the spirit of the age as they see it developing in the younger generation. They see growing a tendency to materialism, irreverence, and revolt. Unable, or disinclined to face it themselves, and having become accustomed in latter years to leave the education of their sons to strangers, they are anxious to place the task of combating the evil on the teacher. "Moral teaching in schools" has become a shibboleth to them. In frequent talks with such men I have endeavoured to ascertain their views as to the form that the teaching they desire should take but, with rare exceptions, have found that they had none, and were entirely dependent on the sound of the "blessed word." There are a few of course of exceptional intelligence who hold that the teaching of morality must be based on religion. These, as a rule, would advocate the teaching of a religion, or rather a combination of religious truths that all men could agree on, and found the teaching of morality on these.

I have had a somewhat wide experience of the teaching of Arabic both in elementary and higher schools of the indigenous type. While the literature studied is of a religious nature, there is no moral instruction in the strict sense of the word. But in many cases the teacher is a man of well-known sanctity of life who attracts pupils through this as much as by the learning he can bestow. The moral instruction given by such a man, based on and backed by obvious goodness in heart and life, has the strongest effect and not a few Mussulmans everywhere will own their debt in this respect to the Mulla under whom they studied.

# DIFFERENTIATION OF THE CURRICULUM OF SECONDARY SCHOOLS.

# DIFFERENTIATION OF THE CURRICULUM OF SECONDARY SCHOOLS.

## (1) *Points for consideration circulated to Directors of Public Instruction by the Hon'ble Mr. H. W. Orange, Director General of Education.*

1. The main questions propounded for discussion under this heading are the extent to which the course of studies followed by a boy in a secondary school in India varies with his destination after leaving school, and the extent to which it should do so; but it will be convenient at the same time to take note of the other causes for such variation.

2. For the great majority of boys, the subjects which must or may be studied in the high departments of secondary schools are determined by the matriculation examination of the Universities. The schemes of subjects which must or may be offered for those examinations are set forth in the last Quinquennial Review, volume 1, page 71, and volume 2, page 105, and have not been altered since that date.

At Calcutta, the number of subjects which a candidate must take is six, four compulsory and two elective. The compulsory subjects are, (1) English, (2) mathematics, (3) a classical language, and (4) a vernacular language; and the elective subjects are, (1) history, (2) geography and mechanics, (3) classics of a more advanced standard, and (4) mathematics of a more advanced standard.

At Madras, the candidate must take five subjects in four of which he has no choice, *viz.*, (1) English, (2) mathematics, (3) physics and chemistry, (4) history and geography. In the fifth he has a choice, *viz.*, between a classical language and a vernacular language.

In Bombay, a candidate must take six subjects, *viz.* (1) English, (2) a second language, (3) a vernacular language, (4) mathematics, (5) history and geography, (6) elementary chemistry and astronomy. The only field for a candidate's choice for the Bombay matriculation examination is that under the heading of a second language he may pick from a list which includes the Indian classical languages, Greek, Latin and French, and that under the heading of vernacular language, he may pick from a list which contains the five vernacular languages spoken in the Presidency and also Portuguese.

In the Punjab, a candidate must take a different set of subjects according as he wishes to matriculate in the Arts faculty or in the Science faculty. In order to matriculate in Arts, a candidate must take four subjects, and may take five. The compulsory subjects are (1) English, (2) a classical language, (3) mathematics, (4) history and geography, and the optional subject must be taken from the following list :—(1) a vernacular language or French or German, (2) physics and chemistry, (3) physiology and hygiene, (4) a second classical language, and (5) drawing. In order to matriculate in the Science faculty a candidate must take four subjects, and may take five. The compulsory subjects are (1) English, (2) history and geography, (3) mathematics, (4) physics and chemistry; and the optional subjects are (1) botany and zoology, (2) physiology and hygiene, (3) agriculture, and (4) drawing.

At Allahabad, a candidate must take five subjects of which three are compulsory and two are elective. The three compulsory subjects are (1) English, (2) mathematics, (3) history and geography. The elective subjects are either one or two of the following :—(*a*) a classical language, (*b*) an additional classical language, (*c*) physics and chemistry; and, if only one of these three is taken, then the candidate's fifth subject must be one of the following:—(*a*) an Indian vernacular, (*b*) a modern European language, (*c*) drawing, (*d*) agriculture with surveying.

3. These are the conditions laid down for the matriculation examination by the universities and represent therefore the ideas of the different universities as to the extent to which there should be variation in the course of studies followed by boys at secondary schools who intend to proceed to the University. The Madras and Allahabad Universities have accepted in recent years a pass by the departmental school final as a substitute for a pass by the University matriculation examination, and therefore, to this extent, have widened the field of choice open to a secondary school boy who intends to proceed to the university; a point which will be noticed presently.

4. From the regulations for the matriculation examinations as summarised above it will be seen that Madras and Bombay require every secondary school boy to follow the same course of studies, allowing only for a difference in the languages which the candidate may take. At Madras a candidate may choose between a classical and a vernacular language; but in Bombay he must take both a classical and a vernacular language although he is free to choose which classical and which vernacular he will take. Madras publishes some figures showing how this choice is exercised (see table appended hereto), but Bombay does not publish figures of the kind. It may perhaps be presumed that both in Madras and in Bombay the choice as between one vernacular language and another depends entirely upon the boy's race and that the choice as between one classical language and another depends as a rule upon the boy's race or religion. Upon what does the choice at Madras as between a classical and a vernacular language depend? In the Calcutta University the matriculation regulations summarised in paragraph 2 above came into force only in March 1910

and there are at present no published figures showing how the boys have exercised the choice given to them by the new regulations. The old regulations of the Calcutta University for the matriculation required the candidate to take (1) English, (2) mathematics, (3) second language, which might be either classical or vernacular, and (4) history and geography. The way in which this choice was exercised is shown by the appended figures of the matriculation examination of 1908, and the overwhelming popularity of Sanskrit was doubtless due to the fact that under the regulations then in force it was necessary for the students, after passing the matriculation, to take up a classical language, and they could make no use of a vernacular language in their University studies. Perhaps the Directors of the three provinces in the jurisdiction of the Calcutta University will be able to give us some figures showing the comparative popularity of the options now offered by the Calcutta University at the matriculation examination, and a statement of the reasons upon which the choice of one option or another by a boy depends; and will they also kindly record their opinions as to the general effect of the change of regulations upon the schools? Has the widening of the choice of subjects been, in their opinion, of benefit, and in what has the benefit consisted?

5. The Punjab University appears, at first sight, from the regulations summarised above, to prescribe to a schoolboy that he must, while still at school, take his choice whether he is going to join the Arts or the Science faculty when he comes to the university; but it does not really do this, because the regulations of the university permit a boy who has matriculated in Arts to proceed to the Intermediate in Science, and *vice versâ*, and therefore this separation of the matriculation examination into two may be presumed to be nothing more than a guide-post set up by the university to inform the boys that if they wish to become science students at the university, they had better begin science at school. Unfortunately the university publishes no figures showing how the different options offered by the Punjab matriculation examination (which are more numerous than those offered at any other university) are exercised by the boys. Can the Punjab Director give us any information upon this subject and upon the reasons which actuate the boys in their choice? The Allahabad University publishes no figures showing how the options now offered in the matriculation examination are exercised. Can the Allahabad Director of Public Instruction give us any information upon the subject? The present Allahabad entrance examination by which the boys can exercise a choice in respect of two out of the five subjects replaces an older system by which there was no choice at all. Will the United Provinces and Central Provinces Directors kindly give their opinions as to the value and effect upon education which is resulting from this introduction of the element of choice?

6. In the jurisdiction of those universities which give a choice of subjects to the matriculation candidates, *i.e.*, chiefly in the territories of the Calcutta, Allahabad, and Punjab Universities, it may perhaps be presumed that unless the boy lives in a place where he has a wide choice of schools, and unless he is prepared to exercise this choice in order to obtain teaching in some particular subject, his choice must be controlled by the range of subjects in which the school convenient for him to attend provides instruction. Exhaustive information as to the extent to which the different schools provide a range of choice is of course not asked for here; but will the Directors of these territories kindly state in general terms, if they can, the extent to which the schools aim at providing a complete choice and the considerations by which they are guided in their selection? Also whether arrangements are ever made between neighbouring schools to divide the field, some providing some courses of instruction and others providing others? And in such cases whether there is reason to believe that the scholars are guided in their choice of schools by the difference of subjects taught thereat?

7. The universities do not in any case require that the students who are going to become lawyers, doctors, engineers or teachers—and these are the principal professions entered through the university—should, until they begin to specialise for these professions, have followed a distinct course of studies. That is to say, where, *e.g.*, the Intermediate examination is prescribed as the condition of entrance to an engineering college, it is the intermediate examination simply which is prescribed, without any condition as to the subjects which must have been taken in it, and it may be the Intermediate in Arts or the Intermediate in Science; and so with all other entrances to professional colleges. Still less therefore do the universities require that the matriculation examination should be differentiated according to the profession which the boy intends to adopt. In other words, if a boy is going to the university it is not necessary for him, while still at school, to come to a practical decision what he intends to do after passing the matriculation examination. Nevertheless, it may well be that in those territories where the matriculation examination admits of choice, the choice may in some respects correspond to the intended after-career; either because the boy may definitely foresee that, *e.g.*, mathematics and drawing will be useful to him at an engineering college and may therefore study them at school, or, more indirectly, because a boy with a predilection for some forms of study may follow his natural propensities and may afterwards be carried by them into the profession for which they have a bias. Can the Directors in those territories say whether these causes do to any extent operate to influence the boy's choice of his course of studies at the secondary schools? The question appears more particularly to affect medicine and engineering and might perhaps hereafter be answered by a reference to the authorities of those institutions; but the Punjab University is the only one which has admitted the

principle of choice long enough to enable this test to be applied, and that only in respect of medical students.

8. The general questions intended to be raised in the foregoing paragraphs are the comparative merits of the different systems prevalent in India of restricting or widening the choice of subjects for the candidates for matriculation examinations and the considerations by which that choice, where it does exist, is or should be affected.

9. It will be convenient next to look at the courses of study prescribed for the different school final or school leaving certificates.

They are as follows :—

MADRAS.

FIRST EXAMINATION TO BE HELD IN 1911.

*Compulsory.*

A.

1. Elementary mathematics.
2. English.
3. Vernacular composition.

B.

1. Science.
2. Geography.
3. History of India.
4. Drawing.
5. Physical training (for boys) Domestic economy (for girls).

*One or two of the following optional subjects :—*

1. A classical or a foreign or a vernacular language.
2. History of England.
3. Algebra and Geometry.
4. Practical mathematics.
5. Trigonometry.
6. Botany.
7. Physics.
8. Chemistry.
9. Music.
10. Agriculture.
11. Commercial or practical geography.

BOMBAY.

ESTABLISHED ALREADY.

*Compulsory.*

1. Arithmetic.
2. English.
3. A vernacular language.
4. History of India and general geography of the world.

*One of the following optional subjects :—*

1. A classical language.
2. Political economy.
3. Book-keeping and commercial correspondence.
4. Mathematics.
5. Physics.
6. Chemistry.
7. Botany.
8. Agriculture.
9. Drawing.
10. Manual training.
11. Shorthand and type-writing.

UNITED PROVINCES.

FIRST EXAMINATION HELD IN 1910.

*Compulsory.*

1. English.
2. Arithmetic.
   Algebra.
   Geometry.
   Mensuration,
3. A vernacular language.
4. History of India.
5. General geography.

*One of the following optional subjects :—*

1. A classical language.
2. Commerce.
3. Physics and chemistry.
4. Physiography.
5. A further course of mathematics including mechanics and trigonometry.
6. Botany.
7. Agriculture with surveying.
8. Drawing.
9. Manual training.
10. A modern language.
11. Domestic science (for girls).

BURMA.

FIRST EXAMINATION HELD IN 1910.

*Compulsory.*

1. Arithmetic.
2. English.
3. A vernacular language.
4. General geography.

*Not more than four of the following optional subjects :—*

1. History of Burma and a period of Indian history.
2. Pali.
3. Latin.
4. Advanced English (including the prescribed books).
5. Book-keeping and commercial correspondence.
6. Mensuration and elementary surveying.
7. Mathematics.
8. Physics.
9. Elementary physiology and hygiene, domestic economy and hygiene (for girls).
10. Shorthand and type-writing.
11. Drawing.
12. Agriculture.
13. Chemistry.
14. Any other subject approved by the Director.

BENGAL (proposed).

NOT YET INTRODUCED.

*Compulsory.*

1. English.
2. Mathematics (including Arithmetic).
3. Vernacular composition and

*One of the following optional groups :—*

A.—Geography, science, drawing.
B.—History, geography, Sanskrit and Persian.
C.—Geography, précis-writing shorthand and type-writing.
D.—Science, drawing, elementary engineering and manual training.

10. In addition to these school final examination schemes, we must, in order to complete the list of alternative courses of study offered in Indian secondary schools, include also the B and C classes in Bengal and Eastern Bengal, and the clerical and commercial classes in the Punjab.

The B classes in Bengal and Eastern Bengal are an arrangement for permitting boys during the last two years of their high school course to spend part of their time at the high school and part in an engineering school. In the high school they study mathematics and drawing and the elements of chemistry and physics and in the school of engineering they practise carpentry and iron-work and study the elements of engineering.

The C classes in Bengal were intended to be an adaptation of the last two years of the high school course for the purposes of boys intending to enter commercial life. The curriculum, which has been altered from time to time, is merely a non-classical course with English, mathematics, history and geography, drawing and vernacular; but the English taught includes commercial correspondence. The classes have been a failure but have led to the establishment of a separate school for clerks in Calcutta called the Government Commercial Classes.

11. The examination held by the Punjab University in clerical and commercial subjects is a school examination held by the university, and does not admit those who pass it to the university.

In this examination four subjects are fixed and compulsory, and no candidate is allowed to take up more than five subjects in all.

The following are the subjects of examination :—

*Fixed and compulsory subjects.*

I. English.

II. Dictation and caligraphy. Précis-writing and correspondence.

III. General and commercial geography.

IV. Book-keeping and commercial arithmetic.

*Optional subjects.*

Not more than one of the following :—

(1) Urdu.

(2) Native system of accounts.

(3) Shorthand-writing (phonography).

12. The Bombay school final has been for some time established and the number of candidates who went in for it in 1910 was nearly 1,000. Appended hereto are particulars showing the subjects taken and the number of candidates taking each optional subject.

In the United Provinces the candidates were thus distributed according to the optional subjects taken up :—Sanskrit 31, Persian with Arabic 83, Arabic 1, French 1, Commerce 54, physics and chemistry 94, further mathematics 3, drawing 53, manual training 5. 228 candidates chose Urdu as their vernacular, 90 chose Hindi, and 7 Bengali.

In Burma the candidates were thus distributed according to the optional subjects taken up :—

| | | | | | |
|---|---|---|---|---|---|
| Advanced English | 39 | Pali | 34 | Commercial correspondence | 5 |
| History | 66 | Book-keeping | 5 | Hygience | 13 |

but I am not sure whether the figures are quite complete. Perhaps the Burma Director will kindly check them.

The scheme for Bengal is at present only a scheme and has not yet been introduced. The number of boys completing the B course in Bengal and Eastern Bengal and Assam in 1909 was 94 of whom 39 passed. The number of boys completing the C course in 1909 was—

| | |
|---|---|
| Bengal | 9 of whom 4 passed. |
| Eastern Bengal and Assam | none. |

The Punjab clerical and commercial examination has been in force for some years and in the year 1907 thirty boys passed it. The number of candidates appearing for the examination and also the number of candidates taking each of the optional subjects is not reported by the university. Could the Punjab Director kindly supply this information ?

13. The University of Allahabad accepts the school leaving certificate in lieu of matriculation. The University of Madras does the same, subject to rules to be made by the syndicate; but I have not yet seen any rules upon the point; perhaps the Madras Director will kindly say whether any such rules have been drawn up or whether the university accepts any pass by the school leaving examination, whatever the subject taken.

In Bombay the university does not accept the school leaving certificate as equivalent to matriculation and has, I believe, never been asked to do so.

The Calcutta University has not been asked to accept the Burma certificate in lieu of the matriculation examination; but it is intended, when the Bengal scheme is introduced, to invite it to accept the Bengal school leaving certificate in lieu of the matriculation examination.

14. It will be observed that the only province which groups the subjects is Bengal, where four, and four only, distinct groups are offered for choice. At the other extreme stands Burma, which, while prescribing as compulsory the subjects English, arithmetic, a vernacular language, and general geography, permits a candidate to take as many as four out of a list of thirteen optional subjects, a list which may be extended at the discretion of

the Director. The other three school leaving examinations, *viz.*, those of Madras, Bombay, and the United Provinces, leave only one subject to the choice of the candidate and prescribe the remainder of his subjects. The common basis of all these courses is a compulsory minimum of English, mathematics, vernacular language, history and geography; but Madras adds thereto science, and drawing, and physical training for boys, and domestic economy for girls. Most of the subjects on the optional lists form part of a general education, and the principles upon which the choice between them is presumably intended to be exercised would appear to be the predilection of the boy for one subject or another, so that besides studying the irreducible minimum of English, arithmetic, vernacular, history and geography (Bengal does not consider history and geography to come within the irreducible minimum and Burma does not consider history to fall within it) he may consult his own tastes as to adding thereto either classics, or further mathematics, or a branch of science.

15. There are however some subjects which bear a vocational aspect. These are, in Madras and the United Provinces, agriculture; in Bengal, elementary engineering; in Madras, commercial geography; in Bombay and Burma, book-keeping and commercial correspondence as one subject and shorthand and type-writing as another alternative subject; in the United Provinces, commerce, which includes book-keeping and commercial arithmetic, commercial correspondence and type-writing, and in Bengal, précis-writing, shorthand and type-writing.

16. With regard to agriculture it may be remarked that the Board of Agriculture on which the teaching staff of all the agricultural colleges are strongly represented, not only do not desire that boys who enter agricultural colleges should have studied agriculture at school, but are strongly opposed to any such idea. In their opinion the best curriculum to be followed at a secondary school by a boy who intends to enter an agricultural college is a general secondary education, including training for the hand and eye; and they suggest for this purpose manual training and nature study leading to elementary botany or chemistry. In the United Provinces, no candidates took the optional subject of agriculture, in Bombay 35 took it. Will the Director of Bombay kindly notice the point and give his opinion as to the purpose which is served by the teaching of agriculture in the secondary school course?

17. As regards the commerce subjects, the numbers of candidates were as follows :—

| | |
|---|---|
| BOMBAY— | |
| Book-keeping and commercial correspondence | 25 |
| Shorthand and type-writing | 6 |
| Total | 31 |
| BENGAL | 9 |
| UNITED PROVINCES— | |
| Commerce | 54 |
| PUNJAB— | |
| Clerical and commercial | 55 |
| BURMA— | |
| Shorthand and type-writing | None |
| Book-keeping and commercial correspondence | 5 |

18. The inclusion of agriculture, type-writing and shorthand, etc., and also of elementary engineering in the studies of secondary schools raises the question of principle whether technical education can properly be given in the secondary school or whether the institution should be separate. If the view that secondary schools ought also to aim at being technical schools is adopted, then there are hardly any bounds to the question what differentiation of studies is required in secondary schools, because every subject which may find a place in any trade or industry might presumably claim entrance as a technical subject to a secondary school. On the hypothesis, however, that this view is rejected, we shall presumably define the relation of secondary schools to technical studies in the way in which the Madras Government have defined it in their general order of 21st July 1909, in which they say that the school final examination will serve ... ... as a final test for young men who are leaving school and who desire to enter a school of professional or technical teaching which is not connected with the university. I would ask what claim shorthand, type-writing, book-keeping, etc., have upon these principles to be included in the secondary school course, and whether the experience of the Directors is in favour of their inclusion or of their being taught in separate schools attended by boys who desire to obtain not a general secondary education but the technical education of a clerk.

19. Supposing the function of a secondary school to be restricted to giving a general education such as will either prepare boys to go to the university or prepare boys to enter upon a course of technical studies or may enable them to enter on such further pursuits as

require for their preliminary only a course of general education, the question to be asked here is whether the secondary schools are at present doing all that they can do in supplying courses of general education that may prepare boys to receive technical training not connected with the university. The number of institutions offering such technical training are at present the agricultural colleges, the textile institutes, the mining classes, and any other technical institutions which may be springing up. The views of the Directors are invited as to any respects in which the experience hitherto gained of sending boys from secondary schools to these institutions suggest any further modification or enlargements of the secondary schools curriculum. In provinces where there has been sufficient progress made with such technical training, the Directors will perhaps be good enough to take the opinions of the authorities of such technical institutions on this point unless they are already sufficiently in possession of them.

20. Is there nothing that the secondary schools ought to do in order to prepare boys to receive technical education in commerce? In some European countries where commercial institutes exist, the chief desideratum in the candidates who enter them from the secondary schools is that they should have received a grounding in modern languages; but this requirement seems to have no application to India, because the chief commercial language is English, which is taught in all the secondary schools, or the vernacular which is spoken in the province, and there seems to be no demand in the higher ranks of commerce in this country for the knowledge of more than one of the Indian vernaculars. When people speak of higher commercial studies in India which shall either predispose towards commerce those who would otherwise "swell the ranks of candidates for Government service" or will make young men of good family, who desire to enter business, better qualified to do so, they generally seem to refer chiefly to the teaching of economics as a university study; and there appears to be no special reason to suppose that this, any more than say political philosophy or law, requires that the studies of students while at school shall have been directed towards that end. The opinions of the Directors are invited upon the point.

21. Besides the differentiation of school studies at the choice of the scholar, which the school final schemes provide, it is to be remarked that the schemes of two provinces, *viz.*, Madras and the United Provinces, provide for very important differentiation in the scope and method of the subjects studied according to the circumstances of the school or the capacity of the teacher. In Madras there are eight compulsory subjects, as mentioned above, but the examination board holds a common examination in only three of these, *viz.*, elementary mathematics, English, and vernacular composition. In the other five, *viz.*, science, geography, history of India, drawing and, for boys, physical training, for girls, domestic economy, no common examination is held; but the fact of the boy having studied them is testified by the head master of the school, and the facts of the school teaching them properly and of the head master's testimony being probably trustworthy, are tested by the inspector in the course of the examination. In the papers of the Madras school final examination, I have not yet seen how the syllabuses of the compulsory subjects are laid down, *i.e.*, whether laid down by the department or by the schools themselves for the approval of the department; and whether the three subjects in which the common examination is held are treated for this purpose on the same or a different footing from the five subjects which are examined only at the school. Will the Madras Director kindly inform us? The Madras scheme is only in its early stages, but if sufficient progress has been made, will the Director kindly inform us whether these provisions for giving greater freedom to schools in the arrangements of their courses are answering expectations?

22. In the United Provinces, syllabuses are laid down by the department for all the subjects in which the examination is held, but the head masters are free to propose their own courses in lieu of those; and where they avail themselves of this power, the examination is held in the syllabuses which they submit. Also the examination, to a considerable extent, depends, not merely upon written work, but upon an oral examination held by the examining board when visiting the school, and upon the record of the boys' work kept at the school. Will the Director of the United Provinces inform us of the extent to which this liberty of submitting alternative syllabuses has been used and whether, in his opinion, the greater freedom given to schools by the school final examination is answering expectations in its beneficial results upon the teaching?

23. With these schemes of school leaving examinations coming into force, and with the growing tendency to give a greater amount of choice to the candidates for university Matriculation examinations, do the Directors find that any embarrassment is being caused by the attempt of the schools to offer too many choices and by the inconstancy of the demand in any one place for particular optional subjects? Do the Directors consider that it would be an advantage if the system of secondary education, whether it has the university or other careers in view, should settle down into some more definite grouping of schools? If there were a classification of schools according to the main features of their curriculum, it would not of course be impossible still to permit a certain latitude of optional subjects within that classification. Thus for instance in the non-classical schools which cultivate science provision might be made for more than one alternative course of science studies; and naturally the classical schools would as a rule need to offer more than one choice of a classical subject. The question is whether by advancing towards such a classification we should gain any distinctness of aim and economy of teaching power; or whether it is better to adhere to

a looser system in which all schools which prepare up to the standard of the university matriculation or its equivalent fall into the class of high schools, without further qualification, and each school does the best it can to satisfy all of the various demands that may be made upon it for differentiation of courses.

H. W. Orange.

*June 1910.*

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Appendix to the points for consideration.

*Matriculation Examination, 1908, Madras.*

| Language. | Number of candidates. | Number passed. | Percentage of passes. |
|---|---|---|---|
| 1. Arabic | 11 | 7 | 63·6 |
| 2. French | 60 | 50 | 83·3 |
| 3. German | ... | ... | ... |
| 4. Hebrew | ... | ... | ... |
| 5. Kanarese | 533 | 515 | 96 6 |
| 6. Latin | 133 | 97 | 72·9 |
| 7. Malayalam | 1,609 | 1,363 | 84·7 |
| 8. Persian | 40 | 24 | 60·0 |
| 9. Sanskrit | 1,894 | 1,524 | 80·5 |
| 10. Tamil | 2,595 | 1,877 | 72·2 |
| 11. Telugu | 1,806 | 1,366 | 75·7 |
| 12. Urdu | 78 | 66 | 84·6 |
| 13. Uriya | 24 | 22 | 91·7 |
| 14. Marathi | 5 | 3 | 60·0 |
| Total | 8,788 | 6,914 | 78·7 |

*Bombay School Final Examination, 1908.*

In the compulsory subjects the results were as follows:—

| Subject. | Number of candidates. | Number passed. | Percentage of success. |
|---|---|---|---|
| English— | | | |
| Written | 975 | 633 | 64 |
| Oral | 970 | 649 | 66 |
| Arithmetic | 973 | 828 | 85 |
| Vernacular— | | | |
| Written | 974 | 765 | 78 |
| Oral | 968 | 807 | 83 |
| History and Geography— | | | |
| History | 974 | 637 | 65 |
| Geography | 974 | 542 | 55 |

| Name of the Vernacular. | Number appeared. | Number passed. |
|---|---|---|
| Marathi | 400 | 287 |
| Gujarati | 236 | 191 |
| Kanarese | 184 | 164 |
| Sindhi | 143 | 110 |
| Urdu | 7 | 4 |
| Latin | 4 | 4 |
| Total | 974 | 760 |

In the optional subjects the results were as follows :—

| Subject. | Number of candidates. | Number passed. | Percentage of success. |
|---|---|---|---|
| I. Classical Languages | 87 | 65 | 74 |
| II. Political Economy | 91 | 56 | 61 |
| III. Book-keeping and commercial correspondence | 25 | 20 | 80 |
| IV. Mathematics | 383 | 291 | 75 |
| V. Physics | 4 | 4 | 100 |
| VI. Chemistry | 19 | 15 | 78 |
| VII. Botany | 109 | 88 | 80 |
| VIII. Agriculture | 35 | 33 | 94 |
| IX. Drawing | 198 | 168 | 84 |
| X. Manual training | 19 | 12 | 63 |
| XI. Short-hand and type-writing | 6 | 5 | 83 |

| Names of the Classical Languages. | Number appeared. | Number passed. |
|---|---|---|
| Sanskrit | 34 | 28 |
| Persian | 53 | 37 |
| TOTAL | 87 | 65 |

*Matriculation Examination, 1908, Calcutta.*

| Languages. | Number of candidates. | Number passed. | Percentage of passes. |
|---|---|---|---|
| 1. Arabic | 8 | 7 | 87·5 |
| 2. Assamese | 38 | 37 | 97·36 |
| 3. Bengali | 443 | 403 | 90 97 |
| 4. Burmese | 261 | 248 | 95·01 |
| 5. French | 17 | 15 | 88·23 |
| 6. Greek | 2 | 2 | 100 |
| 7. Hindi | 69 | 49 | 71·01 |
| 8. Khasi | 5 | 5 | 100 |
| 9. Latin | 43 | 33 | 76·74 |
| 10. Pali | 7 | 7 | 100 |
| 11. Persian | 734 | 599 | 81·6 |
| 12. Sanskrit | 4,842 | 4,158 | 85·87 |
| 13. Tamil | 23 | 23 | 100 |
| 14. Telugu | 2 | 2 | 100 |
| 15. Urdu | 5 | 5 | 100 |
| 16. Uriya | 18 | 17 | 94·44 |
| TOTAL | 6,517 | 5,610 | 86·08 |

## (2) *Note on the Differentiation of the Curriculum in Secondary Schools, by the Hon'ble Mr. W. H. Sharp, Director of Public Instruction, Bombay.*

### MATRICULATION.

1. What determines a boy's choice as between one vernacular and another? Is it race?

Yes, as a rule; except in the case of Mahomedans, some of whom take the local vernacular at school while professing that Urdu is their mother-tongue. There are also people in the Deccan who speak a corrupt Gujarati at home, but take Marathi as their vernacular at school.

2. What determines a boy's choice as between one classical language and another? Is it race and religion?

Primarily religion. Thus Hindus take Sanskrit, Parsis Persian or Avesta-Pahlavi, Mahomedans Persian or Arabic, Jews Hebrew, Christians Latin. Sindhis, however, almost invariably take Persian in preference to Sanskrit, their own language being allied to Persian. A disturbing factor is introduced by the relative difficulty of the languages, real or supposed

thus many Hindus now take Persian as being easier than Sanskrit, whilst both Hindus and Parsis take French as being easier than either Sanskrit or Persian. There is, however, to some extent a genuine movement amongst Parsis in favour of French. Really, of course, it is not a classical language at all.

3. Does a boy definitely foresee anything at school and arrange his studies accordingly? Or has he any natural predilections which he follows?

The ambition of most of the boys is to become graduates; and however poor or stupid they may be they are curiously sanguine of obtaining success by the favour of the examiners and of providence. In this respect neither they nor their parent show any rational foresight at all. In Bombay, however, there are also boys whose fathers have well-established businesses, and who only require to learn a reasonable amount of English; some of them, nevertheless, take the trouble to pass the matriculation or school final, and even to serve in an office for a year or two in order to improve their knowledge of English and of Englishmen. It is rare to find a boy making a special study of a subject because he has a natural predilection for it. The reverse is unsually the case with the industrious boy, who works hardest at the subjects which are most distasteful. This is probably due to the fact that candidates must pass in every subject at matriculation, excellence in one not condoning weakness in another. It is perhaps a fallacy that the average Indian boy is extraordinarily industrious. They will cram to any extent for a few weeks; but when it is a question of steady work a larger number of them shirk it as persistently as any English boy. In this Presidency the only option a boy can exercise is between the matriculation and the school final; and a larger number who know that they are too poor to afford a college course still appear for the matriculation in the hope that something will turn up in their favour. The recent orders of Government absolutely barring the matriculation as a qualification for service are likely to alter this attitude to some extent.

4. The comparative merits of the systems sketched in Mr. Orange's memorandum in the matter of restricting or widening the choice of subjects for the matriculation.

The only school-masters who have proposed the introduction of options here have done so obviously with a desire to assimilate the matriculation to the school final, and to get one examination substituted for two. The new course proposed for the first college year consists of English, second language, mathematics, and elementary science. These subjects, with the possible exception of science, will presumably be included in matriculation; and schools will naturally teach history and geography and the vernacular in addition. Except for science, therefore, the subjects required for matriculation are likely to continue to be the same. The present course in fact is not a bad basis for a university course, if properly taught; and it is the methods of teaching rather than the subjects that need to be reformed. Another consideration is that at present teachers for these subjects can be found; but it is of no use to prescribe subjects for which teachers cannot be found.

*School final.*

5. Should the university accept the school final certificate in lieu of matriculation?

The Bombay University has never formally been asked to do so; and if asked it would probably have refused. One objection to asking is that it might then think fit to exact conditions restrictive of school-work. On the whole I think it better to lay down a good general curriculum, and a good final examination at the end of it, and then to say to the university—This is what we teach and this is the certificate that we give; take it or leave it as you please, but if you choose to exact something for matriculation which we do not undertake to teach you will not get any matriculates.

At present, in order to secure equivalence between the two, a school final boy would have to offer, besides the compulsory school final subjects, classical language, algebra and geometry, history of England, and science; whereas by the rules of the school final he is limited to one optional subject. It is likely, however, that before long the university will make considerable changes in its matriculation, including perhaps the dropping of science as an examination subject; whilst the department has just revised the school final scheme and brought it closer to the matriculation, so that (apart from science) the school final compulsory subjects plus a classical language will be practically equivalent to the matriculation subjects. As Government have now strictly forbidden the matriculation to be accepted as a qualification for Government service, it is certain that an increased number of boys will appear for the school final; and it is probable that public opinion will urge the university into accepting the school final certificate (including classical language), in order to save boys from the expense and trouble of appearing for both examinations.

From 1912 the school final scheme will be as follows:—

*Compulsory subjects.*

1. English.
2. Vernacular.
3. Arithmetic, algebra, and geometry.
4. History and geography.

In addition to which a candidate may, *if he pleases*, take one of the following :—

*Optional subjects.*

1. A classical language.
2. Drawing,
3. Manual training.
4. Commercial subjects.

6. The comparative merits of the schemes which leave a small and a large option to the school final candidate.

It will be seen that we have committed ourselves to a comparatively narrow option. In the first place a boy can choose whether he will offer an optional subject at all and the mediocrities will presumably not do so. If he decides to offer an optional subject, he can choose one only out of four, which will be endorsed on his certificate (if he passes) as an extra qualification. If he is going to the university he will naturally offer a classical language, and we hope that this certificate will eventually be accepted by the university as equal to matriculation. If he is going into business he can offer the commercial subjects. The remaining subjects, drawing and manual training, are left as openings for special predilections, in view of the acknowledged need of getting Indian boys to do more with their hands and eyes, and of undermining hereditary prejudice against any kind of manual work.

If the certificate is to be accepted by the university, no great amount of differentiation is possible. In the existing school final a boy is compelled to offer one "optional" subject, but the choice of these is considerably greater. Political economy is being dropped as hardly being a school subject; mathematics (*i.e.*, algebra and geometry) is being taken over into the compulsory subject; physics, chemistry, and botany are being dropped as scarcely any schools are equipped to teach them, and as fresh arrangements for the study of science are in contemplation; agriculture is being dropped because very few schools were in a position to teach it, and it seems scarcely possible that high schoolboys could practise it to any extent.

7. What determines a boy's choice of his optional subject?

A school final candidate questioned on the subject usually replies, 'Mr. . . . . . is very fond of botany or political economy (as the case may be), and he persuaded us to take it. Of course the capacity of a school to teach a particular subject is a determining factor; so also its reputed easiness. Few appear to choose a subject because of any special interest which may have for themselves.

1. What purpose is served by the teaching of agriculture in the secondary school course?

In my opinion, none, and we have decided to drop it. It was introduced about 1878 by Sir Richard Temple, who thought it cheaper and easier to attach agricultural classes to some of the high schools than to open special agricultural schools. The students were to study only English and vernacular besides agriculture, and after a course of two years were to be admitted to an agricultural college at Poona. Seven such classes were sanctioned, but they seem to have died a natural death before long, and those boys who continued to offer agriculture for the school final were expected to study the ordinary school subjects along with it. When the department took the school final examination over from the university which formerly conducted it, it was not thought advisable to make any radical changes, and so the subject of agriculture was taken over with the rest. In the circumstances it appears to me unlikely that enough practical work can be undertaken to make the course of any real value.

9. What claim have technical subjects like shorthand, type-writing, book-keeping, etc., to be included in the secondary course?

To answer this question it would be necessary first to settle what a secondary school ought to be. As long as such schools are open to boys who have to earn their living immediately after completing the course, subjects which enhance a boy's chance of obtaining employment early should not be excluded, even if the educational value of shorthand and typewriting is very low. The question is whether they do enhance the boy's chances. A good many business men say, "Give us a sharp boy who can write a decent hand, copy a letter correctly, and add up a column of figures, and we will teach him all the book-keeping, etc., that he needs. In Bombay at least there are various commercial schools, including evening classes, where a boy can learn these things after he has left the high school.

10. Does experience lead you to prefer their being taught in separate schools attended by boys who desire to obtain not a general secondary education, but the technical education of a clerk?

The subjects are probably better taught in special schools but these do not exist everywhere. It is a distinct advantage to the boys that they should stay at the high school and associate with their fellows who are proceeding to the university as long as possible. Even a clerk is the better for a decent education, and may prove more useful if he has pursued his high school studies instead of playing with a typewriter. An intelligent man can pick up typing and shorthand fast enough; whereas the atmosphere which might replace the study of the subjects of a general education scarcely exists as yet in this country.

11. Supposing that the function of a secondary school is limited to giving a general education such as will prepare boys to enter either the university or a course of technical studies

or such pursuits as require only general education; are our secondary schools at present doing all that they can to supply such general education as will prepare boys to receive technical training not connected with the university?

The Principal of the Engineering College writes that the boys attending his workshop come direct from high schools, and have as a rule a very poor knowledge of English; nor has the subject of mathematics been taught in such a way as to make them understand that mathematics can be turned to a practical use in every-day life. The Principal of the Victoria Jubilee Technical Institute writes that he also receives boys direct from high schools; that their English is weak, and they lack powers of observation and inclination towards manual work. He suggests that carpentry, elementary engineering, and shorthand should be introduced into the curriculum; but not typewriting, which can be learnt at any time in a very short period. Reminders have failed to extract any reply from either the Principal of the Poona Agricultural College, or Mr. K. S. Aiyar, who is responsible for the commercial portion of the school final curriculum. The Principal of a Parsi school of commerce in Bombay complains that the matriculation standard of English does not enable a boy to understand the teaching in the college of commerce. These commercial classes in Bombay are mainly recruited from boys who have completed, or at least partly studied, the matriculation course, the glamour of this being so great that few concern themselves about the school final, even though it may include commercial subjects.

On the whole it would appear that the chief desiderata are a better working knowledge of English, more appreciation of the practical applications of mathematics, and better training of the hand and eye through workshop or laboratory practice.

12. Do boys who are destined for technical education in commerce require more grounding in vernaculars or other modern languages?

Apparently not, though there is said to be some demand for French as a commercial language. It was suggested once that boys proceeding to business in Bombay might find it useful to know both Marathi and Gujarati; but I have not been able to find any support for this view.

13. Does the teaching of economics as a university subject require any special grounding at school?

No; though some elementary aspects of the subject might be associated with the teaching of history and geography. Few offer it as an optional for the present school final; they seem to learn it almost entirely from the book, with little idea of practical applications. The subject is generally thought too stiff for a high school, and we are dropping it from the revised school final.

14. What do you think of the Madras system of examining only in mathematics, English and vernacular composition, leaving the other subjects to be attested by the school?

I think that a *school final* examination should include the main subjects of the school course, if it is to carry any weight; and that to leave subjects to schools would lead to their being scamped in many cases, unless the inspecting staff were greatly strengthened. I have, however, proposed to leave one subject, *viz.*, science, to the schools, because I am convinced that it is not a good examination subject, and in the hope that the inspecting staff, possibly strengthened hereafter, will be able to deal with it. But a very influential member of the senate has proposed that for the matriculation the university should examine only in English and mathematics; to which some would add history or classical language, or both. I am doubtful if this will be accepted by the senate, but I am supporting it because (1) it will give such schools as wish it the opportunity to teach certain subjects through the vernacular, (2) it will eventually, I think, lead to the disappearance of the matriculation as a general school-leaving examination in favour of the school final. Some schools at least appear unwilling to accept any such responsibility.

15. Is any embarrassment being caused by schools attempting to offer too many choices or by the inconsistency of the demand if any one press for particular optional subjects?

No such embarrassment has been experienced; in fact the case might rather be the other way, or that boys do not have sufficient choice owing to the limitations of schools. If a school specializes it is in the subjects that are popular locally, and thus the demand is not, as a rule, inconstant.

16. Should secondary schools be more definitely grouped according to the main features of their curriculum, or continue to be classed together under the general name of high schools?

It is possible that in the not very distant future commercial high schools may deserve to be separated off; otherwise under present conditions "high schools" differ very little in type, and cannot well be subdivided. India in my opinion stands in need of a very much wider diffusion of general knowledge and culture before much specialisation of schools can be profitably attempted; and at present the specialized teachers are hardly available for such schools.

W. H. SHARP,
*Director of Public Instruction, Bombay.*

POONA;
*21st September 1910.*

## *(3) Note on the Differentiation of the Curriculum in Secondary Schools, by the Hon'ble Mr. G. W. Küchler, Director of Public Instruction, Bengal.*

I have the honour to address you with reference to the printed note on the differentiation of the curriculum of secondary schools received with your demi-official letter no. 329-336, dated 4th July 1910.

2. With regard to the question of the comparative popularity of the options now offered by the Calcutta University raised in paragraph 4 of the note, I submit the following statement which shews the number of candidates who appeared at the recent matriculation examination from schools situated in the province of Bengal and the optional subjects taken up by them.

| Province. | Additional mathematics. | Additional classics. | History. | Geography. | Mechanics. |
|---|---|---|---|---|---|
| Bengal . . | 919 | 1,150 | 1,812 | 429 | 69 |

2. It may be stated generally that a boy's choice of subjects is controlled to a large extent by the range of subjects which is provided by the school which it is convenient for him to attend. In cases where a complete choice is offered it is not easy to determine precisely the reasons which influence the choice of particular subjects; it may, however, be noted that history is a favourite subject of university study, classics is an inexpensive branch of study and other subjects offer a good preparation for science and conform to popular demand.

3. The widening of the choice of subjects is undoubtedly beneficial enabling those boys who at the age of about 15 shew a special aptitude and liking for certain branches of study to follow their natural bent to a limited degree without neglecting the ordinary subjects of a general education. Optional subjects would not be taken up before the 2nd class of a high school and therefore not before a boy has attained at least the age of 15. The chief benefit however of the change for regulations lies in the effect of the new syllabuses in discouraging methods of cram.

4. Next with regard to the points raised in paragraph 6 of the note it may be stated that where classes can be formed sufficient in number to justify their doing so, Government schools offer a complete choice of subjects. Private schools are forced to limit their range of subjects according to their resources. Aided and unaided schools are generally unable to offer geography and mechanics on the score of the expense involved in the teaching of these subjects. History, as explained above, is a favourite subject and classics an inexpensive one, and moreover teachers possessing the requisite qualifications to teach these two subjects are easily obtained. The difficulty with regard to mathematics is the paucity of 'B' course graduates. The question whether neighbouring schools ever arrange to provide the full range of subjects conjointly must be answered in the negative. The choice of schools is not determined mainly by the range of subjects offered. Parents in the mufassil send their boys to the nearest high school. In large centres where there are a number of high schools choice is dictated partly by the free rate and partly by the general reputation of the school rather than by the range of subjects taught.

5. Referring to the question as to whether high school pupils are at all influenced in their choice of subjects to be taken up during the school course by the profession which they intend subsequently to adopt, it may be said that when predilection and opportunity coincide it may be expected that a boy would be so guided; but in this country it is rather the prospects of employment than natural tendency that determine the choice of profession amongst the literate. The point, however, is this: if a boy before leaving a high school is allowed to a moderate extent to take up, specially, those subjects for which he has an aptitude this early encouragement of his natural bent will probably have its effect, should circumstances permit, in the choice he subsequently makes of a collegiate career, determining him either to medical or engineering work, or to more purely University studies, and, in the latter case, guiding him to the selection of suitable subjects.

6. In paragraph 18 of the note an expression of opinion is invited as to whether such subjects as shorthand, type-writing, elementary engineering, etc., should find place in the secondary schools curriculum. I am of opinion, and Messrs. Denning, Heaton and Champan, whom I consulted in the matter, agree with me generally, that all purely technical or vocational subjects should come after the school final examination, or in other words that engineering, typewriting, shorthand, book-keeping, etc., should be taught in separate technical and professional schools. It is generally agreed that what is really wanted is that students desiring to proceed to technical and professional institutes after leaving high schools shall have received a thoroughly good grounding in the ordinary school subjects.

7. This brings me to the question raised in paragraph 19 of the note on the differentiatio of the curriculum of secondary schools, *viz.*, as to what further modifications or enlargements

of the secondary schools curriculum might be introduced in order to prepare boys the better to receive the technical training other than that connected with the university. I think some form of science teaching is called for in the upper classes of high schools in Bengal, but it is useless to introduce science teaching until adequate provision can be made for practical work and a fair supply of qualified teachers can be ensured. It was this consideration which determined the exclusion, for the present, of science from the list of subjects for the matriculation examination. The Committee that drew up the final form of the university regulations were convinced that science teaching without competent instructors and genuine practical work would simply lead to the worst form of cramming.

8. As to the point raised in paragraph 20, it is sufficiently answered by what has already been said in this letter. There is no necessity to lay down special course for boys who intend to take up a commercial career. An appropriate exercise of the option already allowed in the last two years' work at school will be sufficient to ensure the more practical turn that should be given to the studies during this period of a boy who intends to take up a commercial career.

9. Finally with regard to the question asked in paragraph 23, I may say that so far no embarrassment is being caused by the attempts of schools to offer too many choices, but it is impossible to predict whether there will be any inconvenience in this respect when the school final is introduced. I doubt, however, whether any definite grouping of schools would be practicable. Certainly such a grouping could only be carried out in the large centres and in Bengal by far the greater number of schools are scattered over the mufussil. Moreover, even in a centre such as Calcutta, it must be remembered that the schools are practically all day schools and that parents do not care to send their boys to schools situated at any considerable distance from their homes. This consideration therefore stands effectively in the way of grouping the schools according to the nature of the subjects that they offer and the present system of classification will, I think, have to continue for some considerable time to come.

10. In conclusion I would point out that there is a slight error in the description of the proposed school final course in Bengal. Group E which comprises English, mathematics, vernacular composition, agriculture, science and geography has been omitted and in group B the optional subjects should be history, geography, Sanskrit *or* Persian.

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## *(4) Note on the Differentiation of the Curriculum in Secondary Schools, by the Hon'ble Mr. C. F. de la Fosse, Director of Public Instruction, United Provinces.*

(*a*) "Will the Director of Public Instruction of the United Provinces inform us of the extent to which the liberty of submitting alternative syllabuses has been used in the school-leaving certificate."

It is desirable to point out by way of warning or preface that the school-leaving certificate examination is as yet only in the second year of its existence and that there is consequently only a very brief experience to generalise from. Moreover, the examinatian was at first both unpopular and novel. Things have now settled down. It is less unpopular or more popular, and after the experience of the first examination its novelty has worn off. Hence schools may be said to be adapting themselves better to the new conditions and to be understanding them. Until adaptation has become more or less complete, it is not likely that schools will be familiar with and therefore ready to take advantage of the conditions or privileges offered. However, to answer the definite question, the following facts are given. Up to date the only alternatives offered and approved are two in number.

(1) The manual training course for the A. P. Mission School, Allahabad. But this is really hardly a case in point, for the adaptation of an alternative course was due to the fact that the school had its course ready before the departmental course was drawn up.

(ii) The course in further mathematics at Moradabad High School. This also is not really a case in point. The school having begun the course, as first drafted by the Central Board, was allowed to continue it as an alternative, when the revised course was promulgated by the department. It will be evident, therefore, that experience hitherto obtained does not give any clue to the answer to the second question, *viz.*:—

(*b*) "Whether the greater freedom to schools by the school final examination is answering expectations in its beneficial results upon the teaching." Further experience is necessary to discover (1) whether the freedom of choice will be widely used and (2) whether it will benefit the teaching. So far as can be judged from the experience of the first examination, beneficial results have been due, not to the greater freedom allowed, for the use of which, as appears from the above, no data are yet available, but from the compulsion or stimulus imposed on schools to pursue better and more thorough methods of teaching, and upon the scholar to adopt a steadier and more consistent course of study, in consequence of the obligation to keep proper records of work, to pay greater attention to oral instruction and to eliminate mere show work as far as possible. Though the practice has not amounted to the formal adoption of alternative courses the latitude allowed to headmasters in the choice of reading matter for English has been negatively beneficial inasmuch as it has led to the discarding of so unsuitable a book as 'Tom Brown's School Days' (abridged). But they have not shown themselves

quite capable of exercising discretion in the matter. There has been a tendency to swing to the opposite extreme from slavery to a single text book to an excessively discursive course, and the opinion of the examiners seems to be that some controlling guidance is required to keep them in the *viâ media.* Something, it is hoped, will be achieved in this direction by the Text-Book Committee which is now required by rule to recommend books which it considers suitable for use in preparation for the school-leaving certificate, and lists of such books have already begun to be circulated for the information of headmasters.

C. F. DE LA FOSSE,

*Director of Public Instruction, United Provinces.*

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*Memorandum on paragraph 23 of Director-General of Education's memorandum on the differentiation of the curriculum of secondary schools.*

(*a*) Do the Directors find that any embarrassment is being caused by the attempt of the schools to offer too many choices and by the inconstancy of the demand in any one place for particular optional subjects.

A certain amount of embarrassment has certainly occurred. It stands to reason (1) that the difficulty of drawing up a time-table increases with the numbers of subjects taught, (2) that greater demands are made on the accommodation available, and it is easier to introduce new subjects than build suitable class rooms for them, *e.g.*, for drawing and science, (3) that it is not altogether easy to find enough competent teachers to satisfy the new demand, *e.g.*, this has been acutely felt in regard to science. But special and temporary causes have aggravated the difficulties necessarily incident to a transition period. Thus a few years ago the Allahabad University prescribed a very easy course in science for the matriculation, and at the same time conferred only a general recognition instead of recognition for particular subjects. The students perceived, as by instinct, that the science course was the softest option, even softer than Persian, which had simultaneously been made repellent by the addition of a very little Arabic and accordingly made a stampede for science. Schools which could not extemporise an apology for science apparatus and teaching were liable to have their high section practically broken up, with the result that science teaching of a sort sprang up all over the province. Subsequently the University did something to repair the mischief by adopting the opposite extreme of a stiff science course which had some effect in stopping the rush, but not very much as the following figures for the matriculation show. The numbers of candidates taking up science in the last three years are :—

| | | | |
|---|---|---|---|
| 1908 . . . . . . . | 2,131 | out of . . . . . . . . | 2,845 |
| 1909 . . . . . . . | 1,796 | " . . . . . . . . | 3,165 |
| 1910 . . . . . . . | 1,943 | " . . . . . . . . | 3,562 |

(*N.B.*—**These figures include candidates from the Central Provinces.**)

These figures afford striking evidence that science is still far the most popular option, the figures in 1910 for Arabic, Persian with Arabic and Sanskrit, being 70, 957, 927 respectively. Apart from these circumstances the introduction of fresh options as such has caused little embarrassment. The teaching of Arabic, Persian and Sanskrit has been traditional and practically universal, there have been practically only two more options added, *viz.*, science and drawing, and these were already taught in the more important schools, in connection with the old school final examination.

As regards the school-leaving certificate examination, it was originally proposed at the Naini Tal Conference that the needs of a division should be the determining factor in the recognition of optional subjects. This idea of a definite grouping was not acted on, when the scheme was introduced, and practically schools have been recognised in every optional subject they were ready to teach. There has, therefore, been a tendency for all schools to approximate to one type, so far as they were able. This has been partly due to the spirit of competition, *e.g.*, one school could not afford to cater for a subject a rival school catered for and (2) the migratory character of the student. If a student had read science, *e.g.*, in one district he naturally wished to find facilities in another district, to which his father or guardian happened to be transferred, (3) the insufficiency of hostels. For it is clearly impossible to make the needs of the division the determining element in recognition of schools, unless there is hostel accommodation for the student to migrate to.

On the whole the embarrassment has been of the general nature described above in reference to the matriculation, and has been due principally to the difficulty of providing teachers and class rooms quickly enough to meet the demand. But it is not due to great variety of options selected. Manual training, further mathematics and French have so far attracted very few candidates; agriculture with surveying, botany, physiography and domestic science none. Science and commerce only are becoming more popular. The candidates in the former have increased from 94 to 286 and in the latter from 54 to 187. But these figures are proportionate to the increase in the number of schools recognised from 18 to 39, and the greater popularity of the examination. On the whole the department has been able to cope

not unsuccessfully with the fresh demands caused by the new subjects. Commerce is undoubtedly becoming very popular and may very possibly cause embarrassment, partly owing to the expense of typewriters, partly to the difficulty of giving class teaching in the subject, and partly because it has been alleged that the commerce course really requires a larger share of the time table than the parallel optional subjects.

(c) As to the proposal to divide schools into classical and non-classical it seems impracticable so far as the United Provinces is concerned. The figures for the matriculation and the school-leaving certificate show that science is too popular to be excluded from any school which claims to be up to date.

C. F. de la Fosse,

*Director of Public Instruction, United Provinces.*

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### *(5) Note on the Differentiation of the Curriculum in Secondary Schools, by the Hon'ble Mr. J. C. Godley, Director of Public Instruction, Punjab.*

I do not think that the question of providing a choice of curricula in secondary schools is of as much importance in India as in Western countries. There must, of course, be a choice of languages to be studied, but a differentiation of curricula according to the professions for which boys are destined does not seem equally necessary at present. In the Punjab, where the scheme of studies gives scope for divergence, the tendency of schools and pupils is to keep to the beaten track, and there is little evidence to show that school studies are chosen with a view to future callings, or that they could be so adapted.

The principal reason is that in all English-teaching high schools English dominates the curriculum. In the Punjab scheme of studies one-third of the school time is assigned to English and as English is the medium of instruction and examination, many of the other lessons are partially lessons in English. The subsidiary subjects, except mathematics, are of small account in comparison. Only one-ninth of the school time is assigned to the "optional" subject. This supremacy of English must continue so long as a knowledge of the language is not merely a key to Government service and well paid private employment, but to the learning and literature of Western countries. The English-teaching high school may be regarded as at once literary, scientific, and commercial in its bent: it prepares for the trades and professions as well as for the university, so far as English is concerned. At the school stage, a distinction can hardly be made between English for commercial, and English for literary purposes: grammar and idiom must be learnt in either case. With English as the main feature of every new curriculum which may be devised, the question of differentiation is reduced to comparatively narrow limits.

In the Punjab an attempt has been made to frame courses of study which would suit different tastes and aspirations. The university holds a different matriculation test in the oriental, arts, and science faculties, besides conducting a clerical and commercial examination for candidates who are not destined for the university. The result does not answer expectations. The oriental faculty examination attracts only a few candidates from the school department of the oriental college: none from high schools. In the science faculty examination one branch of science is compulsory and another (with which drawing is alternative) optional. The number of candidates in 1910 was 122. The clerical and commercial examination, a school-leaving test for would-be clerks, attracted 131 candidates. In the arts faculty entrance examination, on the other hand, there were 2,668. It will be seen from these figures that schools and pupils have not as yet seized the new opportunities with avidity, although the number of candidates taking up science and clerical and commercial subjects tends to increase.

One reason why the attempt to institute alternative curricula has had small success as yet is a pecuniary one: schools cannot afford to duplicate classes and teachers, and science teaching is expensive. A school which decided to teach only the science or the clerical and commercial course would have to face the loss of a number of pupils, linguistic studies being usually preferred. From the pupil's point of view, the science faculty examination is difficult to pass; the clerical and commercial course, though easy, is not considered of any special value for the purpose of obtaining employment, and does not lead to the university. This course is, moreover, based on an unsound principle, because technical accomplishments such as précis-writing and shorthand, the value of which depends on a good knowledge of English, are taught to boys whose knowledge of the language is rudimentary. Alternative courses, therefore, are seldom attempted outside Government high schools. In the science faculty examination almost all the candidates take drawing as their optional subject: no arrangements are made for teaching biology, physiology, or agriculture. In the clerical and commercial examination shorthand is the favourite subject; the native system of accounts is taught at Amritsar; Urdu, as being the easiest subject to pass in, has also several adherents. Statements showing the numbers taking the different optional subjects are appended.

In the arts faculty course, which is taught in all high schools, the practice is to teach Persian as the classical language, though provision is also made for Sanskrit and Arabic if there are enough pupils. Science (physics and chemistry) is taught as an optional subject. But

many pupils take up a vernacular language for the examination, as an easier means of passing. The choice of a vernacular depends on race, religion, and locality. Urdu is naturally popular in Delhi and among Muhammadans, Hindi in professedly Hindi schools, and Punjabi among Sikhs. From the statement appended showing the number of candidates who took up the various optional subjects, it will be seen that the largest number taking Urdu came from Lahore and Delhi, where there are important Islamia schools; the Dayanand anglo-vedic school at Lahore was probably responsible for the large number of candidates in Hindi; and the khalsa schools at Amritsar and Gujranwala for the candidates in Punjabi from those places.

It is improbable that arrangements are ever made among neighbouring schools to divide the field, as suggested in paragraph 6 of the note, and there is little reason to suppose that pupils generally are guided in their choice of schools by the difference of subjects taught there, although this might happen occasionally; *e.g.*, a boy intended for engineering might naturally prefer a school in which drawing were taught, if he were given a choice. But there are many other considerations determining the choice of schools, *e.g.*, place of residence, religion, the reputation of the headmaster, the rate of school-fee; and in most towns there is no choice.

I have perhaps said enough to show that education in the Punjab has not reached a stage of development at which the question raised in the earlier part of the note have much practical bearing.

J. C. GODLEY,
*Director of Public Instruction, Punjab.*

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*Statement showing the number of candidates who took up optional subjects in the matriculation examination of the Punjab university held in March 1910.*

| Place of examination. | Sanskrit. | Science. | Persian. | Urdu. | Arabic. | Drawing. | Hindi. | Pashto. | Punjabi. | Bengali. | Physiology and Hygiene. | Latin. | Botany. | French and German. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Delhi | ... | 100 | 2 | 241 | 6 | 18 | 50 | ... | ... | 18 | ... | ... | 1 | ... | 436 |
| Ambala | ... | 103 | 1 | 114 | 5 | 23 | 12 | ... | 6 | ... | ... | 2 | ... | ... | 266 |
| Lahore | ... | 139 | 1 | 154 | 5 | 46 | 87 | 1 | 2 | 1 | ... | ... | ... | ... | 436 |
| Amritsar | ... | 121 | 3 | 113 | 12 | 24 | 35 | ... | 29 | 1 | ... | ... | ... | ... | 338 |
| Ferozepore | ... | 51 | ... | 39 | ... | 11 | 1 | ... | 4 | ... | ... | ... | ... | ... | 106 |
| Palampore | ... | 18 | ... | 2 | ... | 2 | 1 | ... | ... | ... | ... | ... | ... | ... | 23 |
| Hoshiarpur | ... | 64 | ... | 66 | ... | ... | 34 | ... | ... | ... | ... | ... | ... | ... | 164 |
| Jullundur | 1 | 77 | 3 | 101 | 4 | 19 | 37 | ... | 12 | ... | 2 | ... | ... | ... | 256 |
| Ludhiana | ... | 66 | ... | 90 | 7 | 12 | 11 | ... | 5 | 1 | ... | ... | ... | ... | 192 |
| Multan | 3 | 65 | ... | 72 | 7 | 24 | 22 | ... | 2 | 1 | ... | ... | ... | ... | 196 |
| Sialkot | ... | 59 | ... | 39 | ... | 7 | 18 | .. | 20 | ... | ... | ... | ... | ... | 143 |
| Gujranwala | ... | 72 | 1 | 77 | 3 | 8 | 12 | ... | 25 | ... | ... | ... | ... | ... | 198 |
| Gujrat | ... | 44 | ... | 66 | 5 | 7 | 6 | 1 | 10 | ... | ... | ... | ... | ... | 139 |
| Jhang | ... | 47 | 1 | 21 | ... | 10 | 4 | ... | 3 | ... | ... | ... | ... | ... | 86 |
| Bhera | ... | 39 | 1 | 41 | 2 | 4 | 21 | ... | 1 | ... | ... | ... | ... | ... | 109 |
| Rawalpindi | ... | 46 | ... | 78 | 5 | 4 | 3 | ... | 15 | ... | ... | ... | ... | ... | 151 |
| Dera Ghazi Khan | ... | 31 | ... | 12 | ... | 18 | ... | ... | ... | ... | ... | ... | ... | ... | 61 |
| Mianwali | ... | 32 | ... | 17 | 3 | 7 | 2 | ... | ... | ... | ... | ... | ... | — | 61 |
| Peshawar | ... | 31 | 2 | 31 | 12 | 2 | 10 | 9 | 4 | ... | ... | ... | ... | ... | 101 |
| Dera Ismail Khan | ... | 32 | ... | 25 | 2 | 2 | 7 | ... | ... | ... | ... | ... | ... | ... | 68 |
| Bannu | ... | 12 | 1 | 17 | 1 | ... | 2 | 1 | ... | ... | ... | ... | ... | ... | 34 |
| Quetta | ... | 7 | ... | 16 | ... | ... | 1 | ... | ... | ... | ... | ... | ... | ... | 24 |
| Jammu | ... | 10 | ... | 23 | 3 | ... | 12 | ... | ... | ... | ... | ... | ... | ... | 48 |
| Srinagar | ... | 12 | 1 | 66 | 1 | 4 | 14 | ... | ... | ... | ... | ... | ... | ... | 98 |
| TOTAL | 4 | 1,278 | 17 | 1,521 | 83 | 252 | 402 | 12 | 138 | 22 | 2 | 2 | 1 | ... | 3,734 |

*Statement showing the total number of candidates and the number of passes in the last matriculation examination (science faculty) of the Punjab university, 1910.*

| Name of examination. | No. of candidates. | No. of passes. | NUMBER OF CANDIDATES TAKING UP OPTIONAL SUBJECTS. | | |
|---|---|---|---|---|---|
| | | | Physiology and hygiene. | Drawing. | Biology. |
| Matriculation examination (Science faculty). | 122 | 79 | 5 | 114 | 2 |

*Statement showing the total number of candidates who took up optional subjects in the clerical and commercial examination held in March 1910.*

| Place of examination. | Shorthand writing. | Native system of accounts. | Urdu. | TOTAL. |
|---|---|---|---|---|
| Delhi | 5 | 11 | 4 | 20 |
| Ferozepore | 3 | ... | 12 | 15 |
| Hoshiarpur | 2 | ... | ... | 2 |
| Ludhina | 5 | ... | ... | 5 |
| Amritsar | 10 | 19 | 3 | 32 |
| Lahore | 9 | ... | 1 | 10 |
| Sialkot | 3 | ... | 3 | 6 |
| Gujranwala | 7 | ... | 2 | 9 |
| Bhera | 8 | ... | ... | 8 |
| Multan | 5 | ... | ... | 5 |
| Jammu | 1 | ... | ... | 1 |
| Srinagar | 8 | ... | ... | 8 |
| Ambala | 7 | 1 | 1 | 9 |
| TOTAL | 73 | 31 | 26 | 130 |

## (6) *Note on the Differentiation of the Curriculum in Secondary Schools, by J. G. Coverton, Esq., Director of Public Instruction, Burma.*

With reference to your letter No. 329-336, dated the 4th July 1910, I have the honour to report as follows on the first topic mentioned therein, *viz.*, the differentiation of the curriculum of secondary schools.

2. In March 1910 a departmental examination entitled the "Anglo-vernacular high school final examination" was held for the first time in this province. From January 1912 this examination will supersede the matriculation of the Calcutta university as a qualifying test for certain grades of Government service : at present they are on an equality in this respect. Previous to the institution of the anglo-vernacular high school final test all complete anglo-vernacular high schools in Burma worked only for the "entrance" examination of the Calcutta university, the syllabus for which dominated the anglo-vernacular school curriculum throughout. In 1909 the regulations for the "entrance" examination were superseded and the designation "matriculation" was substituted for that of entrance : the first matriculation examination was held in March 1910. It should be noted that in Burma, where the organization of anglo-vernacular education is still in course of development, a comparatively large number of 'high schools' are not complete, *i.e.*, they have not yet attained the full complement of standards prescribed for the anglo-vernacular curriculum as a whole. It should also be noted that in this province the department with the approval of the local Government continues to hold a public examination for promotion from the top of the middle stage, standard VII, to the lowest standard of the high department, and that this examination also serves as a 'leaving test' for boys who do not wish to proceed higher. A certificate is awarded to successful candidates and the possession of this certificate renders a lad eligible for an appointment to posts under Government carrying a pay not exceeding R50. Speaking generally

I think it is no exaggeration to say that a boy with the seventh standard certificate can usually command, as soon as he leaves school, a salary of from R30 to R50. To a temperament like that of the Burmese the temptation is fatally attractive and not a few lads are thus drawn away from higher education. The justification on the part of Government for the continuance of this arrangement has been the pressing necessity of ensuring a supply of recruits for lower clerical appointments. A statement of the above facts appears to be a necessary preliminary to any discussion of the prevailing features of secondary education in Burma.

3. I proceed to deal with the particular questions raised in your memorandum in so far as they concern this province. In paragraph 4 a request is made for figures showing the comparative popularity of the options offered by the Calcutta University in its matriculation examination, for a statement showing the grounds on which the selection of such options depends and for an opinion on the general effect of the new regulations and in particular, whether the widening of the choice of subjects has been beneficial or not.

4. I regret that the figures called for are not available in this office. Managers of high schools in these matters deal directly with the Calcutta University and copies of correspondence or returns are not supplied to the Director. Managers have been addressed upon the receipt of your letter, but they have failed to furnish definite figures. The general effect however of the information received is to range the optional subjects in the following order of popularity :—

Geography.

History.

Additional mathematics.

Mechanics.

Additional classical language paper (Pali).

Most schools appear to confine themselves to two optional subjects and in the majority of cases the two selected are geography and history.

5. The selection of optional subjects seldom depends upon the predilections of the individual pupil : nor, apparently, even if he has comparative freedom of choice, is a boy guided by considerations of the utility of the various subjects in after-life. In most cases the choice of subjects is dictated by the circumstances of the school attended. In other words, the managers select such subjects as are suitable to the particular conditions under which their schools are organised and work. Considerations of the number and quality of their staffs and of the cost of entertaining additional hands for new subjects naturally affect their decisions in marked degree. This is specially the case where schools wish to work for both the matriculation and the high school final examinations. Duplication of classes is avoided if possible and (thanks to a decision on the part of the Calcutta University recognising the high school final as equivalent to matriculation if certain subjects are taken) boys can be and are prepared together in the same subjects for the two tests. At the same time, managers are influenced by the popularity of certain subjects : in the sense 'popularity' means that certain subjects are looked upon both by pupils and teachers as easier to teach, easier to 'get up' and easier to pass in than certain others.

In regard to history and geography it should be noted that these were compulsory under the old entrance rules, that geography is a compulsory subject in the high school final, and that in history answers may be given at the matriculation examination in vernacular all of which facts tend to give them a greater vogue.

6. Managers consulted agree that it is too early to judge the effect of the new regulations of the university and I concur in this view. The Principal of the Government high school, Moulmein, states that the new course prevents cramming and appears to give a better grounding in English and mathematics : the range of optionals enables boys to escape subjects for which they have no taste. The Principal of the Baptist high school, Rangoon, on the other hand states frankly that the practice in his school is "decidedly in the direction of nullifying the scheme of electives so far as it implies choice on the part of the student" and that he has no regrets on this score : the high school (he adds) is not the place for an elaborate scheme of electives." At present there seem few if any decisive indications of substantial improvement resulting from the new system nor, so far as the matriculation is concerned, does there appear to be any appreciable difference between the methods and procedure adopted by managers and teachers under it and those in vogue under the 'entrance' test. The imposition of a classical language as a compulsory subject has of course extended the teaching of Pali for examination purposes ; the number however taking additional Pali as an optional is minute. The vernaculars have been recognized, but to what extent the teaching or knowledge of Burmese has been improved thereby, cannot be appraised until a much longer interval has elapsed. The abolition of *prescribed* text-books or passages in English, while it reduces the possibilities of cram in one direction, is not altogether approved by all managers. On the other hand, the conditional recognition by the university of the high school final (a recognition for which the educational syndicate in Burma pressed strongly and, as the result may shew, perhaps injudiciously) is likely to identify the matriculation and school final courses more and more closely. Hence the present tendency is to stereotype the anglo-vernacular courses only too effectually and thus to stultify the intentions with which the high school

final was introduced by the education department. Moreover as the quality of work required for a pass in the School Final examination is considerably higher than that of the Matriculation pupils naturally prefer to appear for the latter.

7. The main questions raised in paragraph 6 of the memorandum under reply are practically covered by the data given in paragraphs 4, 5 and 6 above. No school in this province at any rate would undertake to provide for all the optionals at once. Perhaps the Baptist high school, Rangoon, has (notwithstanding the views of the Principal quoted above) gone further in this direction than most institutions. For the matriculation of 1910 in addition to the compulsory subjects its candidates took up Pali, history and mechanics : in 1911 they will offer history, geography, Pali and (in one case only) Latin, geography is taken in lieu of mechanics to enable the staff to deal conveniently with work for the high school final as well as for that of the matriculation, the two courses being made as nearly as possible identical. The only attempt at any deliberate division of the field between various schools has been in relation to these two tests. Thus last year St. John's college, Rangoon, prepared and sent in pupils for the high school final only, as did various Government high schools (*e.g.*, Pegu) while the Baptist high school, Rangoon, and the Government high school, Moulmein, disregarded the high school final in favour of the matriculation. It is possible perhaps to limit certain Government high schools to the high school final, but it is not desirable to enforce any such limitation in aided schools against the will of the managers. The recognition however of the high school final by the Calcutta University not only enables schools to prepare pupils for both examinations with a minimum of expense and trouble, but encourages them to present the same pupils for both. It is therefore a concession most gratifying to the sporting interests of the Burman, who thus obtains a double chance for his one school fee. At the same time it renders it most difficult to insist on any division of labour between schools as regards these two examinations or to differentiate in any important degree the courses leading up to them. Lastly so long as the matriculation, which requires a comparatively low quality of work for a pass, admits both to Government service and to the university, it will be preferred to those variations of the high school final test which are not accepted by the Calcutta university as equivalent to matriculation.

8. The subject of paragraph 7 of the memorandum also has been partially dealt with above (*vide* paragraph 5). The only specific instances of deliberate selection of subjects with a view to their special utility in professional or other careers, which have come to my notice are those in which Latin has been chosen by candidates intending subsequently to enter Medicine or Law or likely to need it for higher courses in England or elsewhere. Of course a pupil who has definitely selected a scientific career or profession, would naturally tend to pay special attention to scientific subjects and perhaps also to mathematics, and to a certain extent the choice of these subjects is based upon this reason. More often however such a selection merely means that a pupil finds them comparatively easy to learn or that a teacher has a reputation for passing his candidates in these subjects. The only engineering institution in the province is the Government school of engineering, Insein, which does not prepare pupils for the university examinations. Under the latest rules access to the higher courses of this school is to be obtained either through the high school final test or (after passing standard VII, anglo-vernacular) by proceeding upwards through the three standards of its technical high school department, in which the instruction is definitely specialized with a view to engineering generally and more particularly to the provision of lower subordinates for the Public Works Department.

2. In paragraph 12 of the memorandum figures for candidates presented for the high school final test of Burma are quoted, but do not appear to be correct. The figures in this office are—

| | |
|---|---|
| Advanced English | 39 |
| History | 72 |
| Pali | 43 |
| Book-keeping | 6 |
| Commercial correspondence | 6 |
| Hygiene | 13 |

The concluding section of paragraph 13 in the memorandum is also incorrect. The Calcutta University in its Registrar's letter No. 281, dated the 13th July 1909, stated in reply to this officer letter No. 7029–10 Ex.-2, dated the 16th June 1909, that the Vice-Chancellor and the syndicate were " prepared to accept as a rule the high school final examination of the province of Burma as equivalent to the matriculation examination of this university, provided the candidates at the final examination take up at least four optional subjects including advanced English, algebra and geometry and a classical language." Each such case, however (it was added), would be judged on its merits and a special order would have to be obtained from the syndicate on each occasion.

10. In regard to the question raised in paragraphs 15, 17, and 18 of the memorandum I may state that in Burma the recent facts are as follows. Officials and business men anxious for a supply of clerks suitable for modern office methods have pressed from time to time that the education department should make some provision for commercial training and in particular for the teaching of shorthand and typewriting. Whether the commercial training should be afforded in separate institutions of a special class or in the ordinary anglo-vernacular

school, and whether typewriting and shorthand should form a compulsory part of the ordinary anglo-vernacular school course or should be treated as an optional 'extra,' and at what stage these subjects should be taken up are matters which those who press for some provision in this behalf do not usually examine in any detail. Nor do these gentlemen always consider carefully the number of subjects which the average anglo-vernacular pupil can or should be reasonably required to undertake or the comparative educational values of the various subjects. In 1907 the Local Government made a reference to me regarding shorthand and typewriting and asked whether a practical study of them could not and should not be undertaken in anglo-vernacular schools, and what encouragement the department would advise should be afforded to teachers or pupils, or to both. The educational syndicate which was consulted by me on the whole question was of opinion that the study of these subjects should be encouraged but not insisted on. Government was informed accordingly and it was pointed out that provision for assistance already existed under the Burma education code. It was also suggested that perhaps arrangements to include the subjects in the syllabus of the anglo-vernacular high school final would be feasible. Eventually Government agreed to offer prizes and to pay the fees of four selected teachers or normal students who desired to undergo training at a private commercial institution in which shorthand and typewriting were taught. Government at the same time desired the education department to encourage the study of these subjects as optionals and the opening of classes for them in schools. Apart from shorthand and typewriting a so-called commercial examination has been somewhat fitfully held by the education department in Burma and certificates have been awarded to successful candidates therein. The conditions of the examination were unsatisfactory and the value of the certificate was dubious. Hence the test has been suspended. The Chamber of Commerce and the Trades Association however appear to desire the reinstitution of some such test for intending clerks and office subordinates. The educational syndicate and myself have therefore had under our consideration the question of introducing the examinations of the London Chamber of Commerce, but the general feeling is that these are excessive in scope and difficulty for the requirements of Burma.

11. Speaking for myself, I am of opinion that typewriting, shorthand, book-keeping, etc., should not be included in an ordinary secondary course and that it is preferable that for those pupils who wish to become clerks and for whom a preliminary training in these subjects prior to their entering Government or commercial or other offices is considered beneficial, separate provision should be made by means of special institutions or classes * which should be attended when a reasonably adequate stage of general education has been reached. It is difficult to fix that stage precisely: but it may (I think) be taken for granted that standard VII falls considerably short of it. That a pass by this standard has been accepted as the qualification for admission to the technical high school department of the Government engineering school is true, but it should be recognized that in the technical high school (especially in the first year) there is a considerable development of general education. Similarly, although it has to be admitted that under the Burma education code (*vide* chapter V, § 150) assistance toward the teaching of these subjects (and of a somewhat heterogeneous collection of others) is still provided, I am not myself in favour of their being taken as parts of the ordinary anglo-vernacular course, whether optional or not. If taken at all they should form part of a special scheme which should be carried out in a separate department or institution. To some extent this principle is already applied in certain Roman Catholic institutions in this province. I hold this view however without prejudice to the 'encouragement of particular phases of practical work (*e.g.*, drawing and needlework) or hand and eye-training' proper, which for obvious educational reasons appear desirable in any sound course of 'secondary education,' as the term is understood in this country.

* *Note*—
A general test held by the department for the benefit of pupils leaving from such special schools might be recommended on several grounds, but it is questionable whether it is in any way essential.

12. The questions raised in paragraphs 19 and 20 of the memorandum are answered to a certain extent by the replies to foregoing questions. In this province Techincal Education is not highly organized (*vide* chapter VII of the Annual Report for 1908-09) and development is and will continue to be slow, so long as the practical demand in the various professions and branches of industry for more highly trained employees does not increase rapidly. As has been explained, the anglo-vernacular courses are still dominated by the matriculation of the Calcutta University. The high school final test represents an attempt at differentiation and was introduced with a view to widening the scope both of pupils and of schools and to affording a suitable preparation for various careers and professions not contemplated under the university courses. Unfortunately the prestige of the latter already exercises a baleful effect upon the high school final scheme which seems liable to become the victim of its rival's powers of fascination and in course of time to be completely assimilated. As regards commerce in particular I have already stated the facts and expressed my views in paragraphs 10 and 11 of this letter. I may perhaps add that most commercial men of standing and experience whom I have from time to time consulted appear to be agreed that for the 'higher walks' of business life a good general education is the best training. For the lower (as indicated above) a reasonable level of ordinary instruction followed by some special training † is considered a sufficient preparation. Some business men however would dispense with the special training as a preliminary requirement. They consider that this can best be given in their own offices.

† *Note.*—
In Burma this might include instrnction in the business side of certain vernaculars according to the nationality of the pupil.

13. Paragraph 23 of the memorandum suggests that the multiplication of optional subjects or course may entail a division of work between particular types of schools and that without this development embarrassment may be caused both to managers and to the department. Such a division of labour and classification of schools might (it is implied) tend to economize teaching power and to strengthen efficiency by concentrating and giving directness to the efforts of the teachers. However feasible in other provinces, any definite development on these lines, in the present conditions (educational and other) obtaining in Burma, appears to be out of the question—unless indeed pressure is to be exercised from above. Local and denominational claims and circumstances, the necessities of Government service, vested interests and popular prejudice would all be opposed to any rigid classification of the kind indicated. The remarks of the Principal of the Baptist school (*vide* paragraph 6 of this report) show that managers have a short way with any scheme of electives that threatens to become embarrassing and it is no less clear from the replies of that educationalist and of others that an attempt to force a classification of schools based upon division of labour would be received with extreme disfavour. It follows therefore that the second alternative set out in the concluding sentence of the memorandum is the only practicable one so far at least as the present circumstances of this province are concerned.

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## (7) *Note on the Differentiation of the Curriculum in Secondary Schools, by the Hon'ble Mr. H. Sharp, Director of Public Instruction, Eastern Bengal and Assam.*

The question which can usefully be answered from this province are to be found—

(*i*) at the end of paragraph 4,

(*ii*) at the end of paragraph 6,

(*iii*) at the end of paragraph 7,

(*iv*) at the end of paragraph 19,

(*v*) at the end of paragraph 20, and

(*vi*) in paragraph 23, of the Hon'ble Mr. Orange's note of June 1910.

2. (*i*) *Comparative popularity of options offered by the Calcutta University.*—At the first matriculation examination, *viz.*, that of 1910, 1,305 candidates presented themselves from this province. I have obtained figures regarding 1,258 of these; and I find that the numbers who had read the different optional subjects are as follows :—

| | |
|---|---|
| Additional mathematics | 512 |
| Additional classics | 594 |
| History | 1,099 |
| Geography | 297 |
| Elementary mechanics | 14 |
| | 2,516 |

Thus history is far the most popular subject. And it is most popular when combined with classics. The numbers for different combinations are as follows :—

| | |
|---|---|
| History and classical languages | 463 |
| History and mathematics | 355 |
| History and geography | 279 |
| Mathematics and a classical language | 129 |
| Geography and mathematics | 16 |
| Mathematics and mechanics | 12 |
| Geography and classics | 2 |
| History and mechanics | 2 |
| | 1,258 |

It is a curious fact that in the Assam Valley history and geography have formed the most popular combination.

3. The comparative numbers under each subject are determined partly by the choice of the boys, partly by the number of schools which offer any particular subject (Sec. ii).

4. The popularity of history is attributed to the fact that it is easy, interesting and quickly memorised; that it aids in promoting a knowledge of English (in which the school boys feel themselves deficient); that the questions at examination may be answered in English or vernacular according to the pupil's choice; and that practically all high schools provide this subject. Classical languages and mathematics are likewise popular subjects. This is because it is easy for the school to offer them and because the additional subjects required are merely continuations of compulsory subjects for the examination. The comparative unpopularity of geography and mechanics is partly due to the fact that but few schools offer these subjects, which require special staff and extra equipment and consequently the provision of additional funds. Moreover, geography is recognised as a difficult subject; and neither of these subjects is of direct use to a boy in his subsequent college career. Special training has been offered in geography and special grants to privately managed schools for geographical

and mechanical equipment. But very little advantage was taken of these offers; and out of 97 schools in Dacca Division only three have adopted elementary mechanics.

5. It is difficult at this early stage to hazard an opinion as to the effect of the change of regulations. A number of head masters have been consulted, who consider that on the whole the choice of optionals is beneficial; but regret is expressed in some quarters that history and geography have not been made compulsory. On the whole, save that geography is not now compulsorily included, I take it that the new regulations have not effected any very radical changes in the organisation of the majority of schools. In those schools where a wide choice is offered I should say the change is likely to prove beneficial, though I share the regret that geography is not insisted upon and though the present regulations give absolutely no encouragement to drawing or to science.

6. (*ii*) *Provision of range of choice in different schools.*—I am able to supply figures for 164 high schools in the province :—

9 schools offer all 5 optionals.
53 " " 4 "
81 " " 3 "
21 " " 2 "

The majority of schools are content to offer additional mathematics, additional classics or history. The reasons are that these subjects attract pupils and that they involve no additional expenditure in the maintenance of the school. The schools which provide a full choice are generally (though not always) Government schools; and all Government schools offer 4 if not the full 5 optionals.

7. There are no instances of reciprocal arrangements between schools for teaching the different subjects. Such arrangements might be made in large towns. In one case of two neighbouring schools an inspector attempted to make such arrangements. I regret to record that in this case his scheme was frustrated by the rivalry prevailing between the two schools. And the Inspector of Dacca likewise asserts that the spirit of rivalry forbids the institution of any reciprocal system.

8. (*iii*) *Influences on the choice of subjects.*—The opinions expressed by inspectors are decidedly depressing. One asserts that boys are not much influenced in their choice by the thought of their careers, the immediate aim being the passing of the examination; another says that he thinks boys take up subjects without thought of the course they propose to adopt in the intermediate examination. Yet another states that selections are made at random and without foresight but that the personality of a teacher has a certain amount of influence. Primarily, no doubt the boys' choice is guided by the optionals offered in the school in which he would naturally read and by his own consciousness as to what choice will best insure his passing the examination. But I think that the inspectors slightly under-rate the influence of individual taste.

9. As regards professional education the time is yet too early to pronounce.

10. (*iv*) *Special preparation for technical training.*—The only special preparation provided in our high schools consists in the existence of "B" classes. The popularity enjoyed by "B" classes has not been overwhelming; and I attribute it such as it is to the facts that a pupil who passes the B final examination is allowed to enter direct into the second year class of the sub-overseer course in a technical school; that the examination is regarded as easier than matriculation; that the fee-rates in "B" classes are lower than the corresponding rates in ordinary high classes of high schools; and that a technical training is chosen by a number of youths who consider their abilities do not fit them for a university career and who therefore choose a less ambitious but more certain line. Indeed I consider that the "B" classes have in the past been to some extent artificially nourished. The head master of the Ahsanullah school of engineering is opposed to the tendency to attempt in secondary schools any sort of elementary miniature of the courses taught in higher institutions. He considers that secondary schools are not fitted for the teaching of special subjects and that they can more usefully impart a purely general education. He complains that "B" class boys are not satisfactory and that they enter the technical school deficient in English.

11. The opinion of the inspectors is likewise generally against specialising in secondary schools. The reason generally assigned is that there is a danger of overloading the course. The inspector of Rajshahi adds that a further multiplication would render the curriculum too elaborate to be handled by one institution. He would prefer to see separate institutions for technical and commercial education. Some officers go so far as to say that while wider choice and specialisation are desirable they are hardly feasible; others assert that the education imparted in secondary schools should be purely of a general order.

12. (*v*) *Special preparation for commercial training.*—"C" classes in this province have proved an entire failure. The reason is obvious. Matriculation leads to the university career; the "B" final to the technical school followed by professional employment; the "C" final leads on to no recognised institution and to no certain career.

13. The question arises in two forms :—

(*a*) the teaching of economics, and

(*b*) the teaching of mere technique.

14. (*a*) Many officers consulted think that economics is too complicated a subject to figure in a high school; but the inspector of Dacca thinks it might aid boys in a commercial education, while the inspector of Chittagong would welcome the introduction of the subject if a suitable text-book can be prepared mainly because this branch of study would tend to destroy incorrect notions. The inspector of Rajshahi re-echoes his opinion that special schools should be started for special classes. Personally I consider that a few economic facts should be taught in high schools, but that the instruction should be most elementary and should be supplemented in the earlier years of college life. But I say this not with reference to a boy's choice of career, but because it is important to counteract the fallacious theories which receive so wide a credence in India. I would strongly deprecate the teaching of economic principles in high schools. The subject is too difficult for boys; and the University of Calcutta has not included it in the Intermediate course.

15. (*b*) The failure of "C" classes has already been noticed. Just as in Bengal their place was taken by the Government commercial classes and others, so in this province they have been followed by the growth of 8 commercial schools with 227 pupils. These schools teach simply the technique of business—shorthand, type-writing, précis and book-keeping. In a few aided schools shorthand and type-writing are being introduced, with special grants for the purpose; and the inspector of Chittagong urges the general introduction of these subjects. Personally I think that these subjects will best be taught in the special schools which have sprung up, though for various reasons I would also advocate the introduction of some elementary education in such subjects in selected high schools; and it is certainly here rather than in the teaching of economics or of commercial principles that success is to be looked for. Even in countries of a high commercial development, the "idea of specialising for business purposes at schools is not current among business men." And in the report of the Mosely Commission it was asserted that the "business college" was the only commercial education that an American business man approves. Still more in India—there does not exist the elaborate system which has called forth an organisation of commercial education in Germany; and, just as it has been asserted that industrial education should follow but not precede industrial development, so also it is not likely that the Indian youth will sink his educational capital in acquiring qualifications for which there is little or no demand.

16. (*vi*) *With reference to the general question in paragraph 23 of the note*, it may, in the first place, be said that no embarrassment is likely to be caused by the choice of subjects offered in the Calcutta matriculation. So long as schools prescribe a limited choice of combinations, their time table will not be liable to disorganisation. The choice is not quite sufficiently wide and encourages literary study at the expense of utilitarian and manual subjects; but it combines a fair general education with the advantages inherent in differentiation. The opinion of inspectors is decidedly against specialisation in secondary schools; and the opinions in favour of special schools for special subjects are neither numerous nor strong. Personally I would deprecate the establishment of such institutions. And, were they instituted, they could never be numerous and their scope would remain very limited. The school which will remain popular is the school which caters for a professional career, *viz.*, which sends its pupils to the college or to the technical school. Schools are very numerous and the majority are privately managed. Their existence depends upon their attractiveness. If the number of pupils diminishes the pay of the teachers vanishes. I notice that the majority (though not all) of the privately managed schools have simply adopted such optionals as are most cheap and most popular. In larger towns it might be possible to establish two kinds of institutions side by side, one for general, one for technical instruction. But the preparation for technical instruction could commence only towards the conclusion of the secondary course and would attract only a limited number of pupils. Nor are the remarks made by the head master of the Ahsanullah school of engineering upon the "B" classes sufficiently encouraging to enable one to pronounce in favour of specialisation as against a general education. Perhaps the most useful extension of the system for optionals for the purpose of matriculation would be the institution of an examination in which a classical language should not be compulsory. It is not necessary that such a step should increase the number of optionals; but it would increase the possibility of combinations.

17. These remarks, however, refer to the generality of schools and to preparation for the matriculation examination. They are prompted by a sense of the inability (mainly from financial reasons) of the great bulk of schools to impart a satisfactory general education along with more specialised instruction. I am strongly in favour of a modern side. I only fear that most schools would find themselves financially unable to maintain such classes, or could do so only at the expense of the efficiency of general training. At selected centres, the institution of such classes and the concentration of funds and efforts upon them are eminently desirable. These classes should be in high schools, not in special institutions. Their establishment will thus be more economical, more conducive to many-sided development, more consonant with the general scheme of education, and, I believe, more popular. As regards popularity, no form of education in the high stage will be thoroughly attractive unless it qualifies for entrance to the university. But the modern side would naturally include classes leading to the "B" final and courses qualifying for ministerial employment under Government. These two factors would give the scheme a good start; and, for the rest, we should look to employment under local bodies and zemindars, to the gradual overcrowding of the learned professions and to the expressed demand for a less purely literary curriculum. Such a scheme was outlined in the Local Government (Municipal Department) letter No. 3339-M., dated the 12th May 1909, to the address of the

Secretary to the Government of India, Department of Commerce and Industry. It would probably involve the adoption of a curriculum including English, geography, history, mathematics, drawing and perhaps manual work as compulsory, with science, surveying, advanced manual work, shorthand, type-writing, etc., as the optionals. Some such scheme would introduce a wholesome and useful course of study into schools along lines in which some consider that the matriculation courses are deficient. But an essential to success is that the scheme be well supported by funds. Decent laboratories, good workshops, and specially trained instructors would be essential.

### (8) *Note on the Differentiation of the Curriculum in Secondary Schools, by A. L. Wright, Esq., Director of Public Instruction, Central Provinces.*

*Paragraph 5.*—As the colleges of these provinces were affiliated to the Allahabad University so recently as 1905, it is impossible to state with any accuracy the value and effect on education which is resulting from the introduction of the element of choice in the subjects for matriculation. Choice is restricted however in the Central Provinces by the rules of the school leaving certificate examination for such boys as desire to take that examination as well as matriculation. The subjects are the same for both examinations and the result of the matriculation examination is the basis of the leaving certificate here being added only the result of the oral examination in certain subjects. But the rules of leaving examination make a vernacular a compulsory subject. Accordingly a boy who desires to take the leaving certificate as well as the matriculation must make choice for his second elective subject between a classical language and science. The omission of either appears fatal to a liberal education but must be undergone. The leaving certificate examination cannot be said to be more than experimental yet as it was held for the first time in 1910, but this point weighs heavily against it as it exists at present.

*Paragraph 6.*—The range of elective subjects is small and of those laid down two have never been desired so far as I know by any pupil—a modern European language and agriculture with surveying. In no school therefore is there any provision for teaching them. All the other subjects are taught in every school although in only a few schools, where for local reasons it is necessary, are two classical languages taught. Boys are therefore not hampered in their choice of subjects by inability to find a school in which the subjects they select are taught.

*Paragraph 7.*—The cases in which his future profession determines the subjects taken up by a boy are rare. These are determined for the most part by the easiness of certain subjects for the purpose of matriculation, or by the casual conditions of the school.

*Paragraph 9.*—I attach a copy of the rules of the school leaving certificate examination in these provinces. The examination was held for the first time in 1909-10.

*Paragraph 19.*—The opinion of the Agricultural College teachers on the question raised is that it is preferable that the boy who enters the College should not have received instruction in agriculture at school. They hold that it is much more difficult to eradicate from his mind the fallacies or mistaken ideas that he may have acquired than to give him a set of ideas *de novo*. At first sight this would seem to imply that they postulate bad teaching of the subject in the schools, but it is not so really. The fullest instructions and experimental work is necessary in the subject if results are to be of value and it is the extent of the instruction not its character which they consider gives rise to error. On the other hand, the teaching of science in schools is regarded as valuable from the general point of view of the formation of a scientific method of thought and observation.

*Paragraph 20.*—I do not consider that we should do anything to prepare boys in our secondary schools to receive technical education in commerce. The tendency towards commercialising education is one which is fatal to real mental culture. And to hold that an Indian schoolboy has received sufficient general education at any period of his school course to be able to afford time to specialise on subjects which are not educative to any degree but merely likely to be remunerative, is obviously ridiculous. Apart from this consideration it is questionable how far the teaching that could be given would be of value as compared with that given in the same time on general subjects, even viewed from the standpoint of the commercial institution. The opinion of the teachers mentioned in paragraph 19 would probably be the same held here. Some years ago I instituted an enquiry in Bombay and Karachi amongst the largest commercial firms as to whether they considered it an advantage for a lad entering business to have studied some commercial subject at school, and whether, all other things being equal, they would select such an one for employment. The reply was almost unanimous that they considered it a disadvantage, and the reason given was that they found that such a boy had sacrificed part of his general education to the study of the purely commercial subject, and was not so capable for that reason of grasping the principles of business. One or two pointed out to me, as illustrative, the growing practice in business houses of recruiting their staff from university men. The same would be the case, I take it, if we prepared boys for future technical or commercial education. They would be much better occupied in receiving general education.

*Paragraph 23.*—I think it would be better to adhere to our present loose system and avoid classification of schools. Where there are many high schools in a place, the classification

suggested generally comes into being roughly and informally by force of circumstances. But to enforce it seems to offer no advantages and to be likely to give rise to several disadvantages. Where schools are isolated, as is the case in the majority of instances, the idea is not feasible.

NOTIFICATION (ANNEXED TO MR. WRIGHT'S NOTE).

*Nagpur, the 23rd July 1909.*

No. 1013.—The following rules for the regulation of the school leaving certificate examination in the Central Provinces, which have been approved by the Government of India, are published for general information:—

*Explanation.*—The Central Provinces school leaving certificate is a certificate to show that boys have received a sound general education. It is at present awarded to those who have passed the matriculation examination of the Allahabad University and also an oral and practical test in such subjects as are prescribed by the rules. Other subjects will be added from time to time as provision is made for teaching them. This certificate is recognised by the Local Administration as qualifying for superior Government service.

NOTE.—After the 1st April 1911 the matriculation certificate shall cease to qualify for admission to superior Government service.

1. The oral and practical test for the school leaving certificate shall be held *in situ* in all recognized schools which present candidates for the matriculation, by an examining committee consisting, as a rule, of the inspector of schools, the head master of the school under examination, and one other person nominated by the inspector for the sanction of the Director.

2. The standards of the oral and practical test examination shall be fixed from time to time by a central board consisting of the Director of Public Instruction, the five circle inspectors and such other members, of whom not less than two shall be non-officials, as the Director of Public Instruction may appoint. The Director of Public Instruction shall be President.

3. The oral and practical test shall be held according to the convenience of the inspector as short a time as possible before the matriculation. All boys in the matriculation class must be presented for this examination unless prevented by ill-health or other sufficient reason, of which satisfactory evidence must be presented to the committee.

*N.B.*—All school tests for the matriculation are hereby abolished.

4. No fee shall be charged for the oral and practical test.

5. The school leaving certificate will be awarded only to those pupils—

(1) who have completed a full high school course in a recognized school or schools in the Central Provinces. Exceptions to this rule may be made in special cases by the Director on the recommendation of the inspector;

(2) who have passed the matriculation examination with Indian vernacular as one of their subjects, as well as the oral or practical test as prescribed in rule 7;

(3) who can produce a satisfactory record of good conduct during their school career. For this purpose the conduct books of the pupils shall be examined by the committee.

6. Candidates who have passed the matriculation but have failed in the oral and practical test may appear for the latter a second time in the following year.

7. The oral and practical test shall be held for the present in the undermentioned subjects:—

| | |
|---|---|
| (*a*) English<br>(*b*) Mathematics | Compulsory in the matriculation ; |
| (*c*) Indian vernacular<br>(*d*) Science<br>(*e*) Drawing<br>(*f*) Agriculture with surveying. | Optional in the matriculation ; |
| (*g*) Commerce<br>(*h*) Type-writing<br>(*i*) Shorthand | Altogether optional ; |

but candidates shall not be required to appear except in the subjects which they take up in the matriculation. The certificates shall state all the subjects in which the pupil has passed both in matriculation and in the oral and practical test.

8. No school shall be entitled to present pupils for the oral and practical test in any of the subjects (*d*) to (*i*) in rule 7 unless formerly certified by the inspector as being properly staffed and equipped for teaching those subjects.

9. In awarding junior college scholarships the results of the oral and practical test shall be taken into account. Candidates for such scholarships shall be examined in physical exercises.

10. No marks shall be awarded for the oral and practical test, but the examining committee shall certify in each subject whether the candidate has failed, passed or done excellently. In arriving at their decision on any candidate the examining committee may take into consideration the results of the promotion examinations in the high school course, and, if they think necessary, any other records of school work. In all cases the examining committee shall give weight to handwriting and spelling and insist on neatness and accuracy of work.

11. The results of the oral and practical test shall not be separately published, but the inspector shall forward the results to the Director, who, after the declaration of the matriculation results, shall publish the names of successful candidates in the gazette and issue certificates. The inspector shall also submit a report upon the oral and practical test in his circle for the information of the central board.

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## APPENDIX A TO MR. WRIGHT'S NOTE.

*School leaving certificate, Central Provinces.*

This is to certify that ______________ son/daughter of ______________, aged ________, student of the ______________ high school, has passed the matriculation of the Allahabad University and also the departmental oral and practical test of the Central Provinces in the following subjects :—

| Signature of the holder of certificate. | Matriculation. | | Departmental Oral and Practical Test. | |
|---|---|---|---|---|
| | English . . . . . . . | | English . . . . . . . . | |
| | Mathematics . . . . . . | | Mathematics . . . . . . . | |
| | Indian vernacular . . . . . | | Indian vernacular . . . . . . | |
| | History and geography . . . . | | Science . . . . . . . . | |
| | Physics and chemistry . . . . | | Drawing . . . . . . . . | |
| | Drawing . . . . . . . . | | Agriculture with surveying . . . | |
| | Agriculture with surveying . . . | | Commerce . . . . . . . | |
| | Classical language . . . . . . | | Type-writing . . . . . . . | |
| | Additional do. . . . . . . | | Shorthand . . . . . . . | |
| | Modern European Language . . . | | Physical exercises . . . . . | |

I certify that the abovementioned candidate has produced satisfactory evidence of good conduct.

(Signed)

*Dated* }

*Director of Public Instruction,*

*Central Provinces.*

APPENDIX B TO MR. WRIGHT'S NOTE.

*Departmental oral and practical test for the school leaving certificate.*

This is to certify that ____________________, son/daughter of ____________, aged ______ years, a student of the ______________ high school, has been examined by the examining committee in the following subjects with results given against each :—

| Subjects. | Results. |
|---|---|
| English . . . . . . . . . | |
| Mathematics . . . . . . . . | |
| Indian vernacular * . . . . . . . | |
| Science . . . . . . . . . | |
| Drawing . . . . . . . . . | |
| Agriculture with surveying . . . . . . | |
| Commerce . . . . . . . . . | |
| Type-writing . . . . . . . . | |
| Shorthand . . . . . . . . . | |
| Physical exercises . . . . . . . | |

He will appear for matriculation in the following subjects :—

*Viz.* :—(1) English, (2) mathematics, (3) history and geography, (4) and (5)

I certify that the abovementioned candidate has/has not produced satisfactory evidence of good conduct during his career at school./from †

(Signed)

*Inspector of Schools,*

*Dated* ________________ ____________ *Circle.*

* The name of the vernacular must be mentioned.

† For private candidates only.

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